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SYMPOSIUM ABSTRACTS

[1] Forum · PRESIDENT'S FORUM: CLIMATE CHANGE AND ARCHAEOLOGY

Archaeologists know that climate change has affected human history in the past and that increased climate variability and sea level rise is affecting people and archaeological sites now. In this forum, climate scientists and archaeologists examine climate change from several perspectives. Speakers will survey models from climate science; past climate change effects on human societies; archaeological remains as proxy climate records; climate change and plant domestication; archaeological heritage management in times of climate change.

[2] Symposium · FORAGERS IN MIDDLE ATLANTIC PREHISTORY

The Middle Atlantic has one of the most fertile and complicated archaeological records of human foraging societies in the United States and is arguably in a position to contribute more globally to studies of foraging culture. Yet archaeologists in the region tend to reference external forager models that do not fit the circumstances of a region so ecologically and culturally diverse. This may be due to a dearth of what has historically been recognized as prerequisite: a strong ethnographic record, well-preserved features, and perishables, as well as the complex ecological zonation of the Middle Atlantic region. Nonetheless, there is a sustained history of research into foraging lifeways throughout the region that ranges from detailed synchronic site analysis to broad-scale environmental reconstructions and settlement pattern and landscape studies. This session proposes a regionally-informed frame of reference for studying foragers in prehistory. It emphasizes the unique, problem-focused approach of Middle Atlantic archaeologists to the study of foragers and highlights the wide range of evidence and approaches that regional archaeologists draw upon to address their questions.

[3] General Session · CONTACT, COLONIAL AND CONTEMPORARY CARIBBEAN ARCHAEOLOGY

[4] Symposium · COMPUTATIONAL APPROACHES IN THE PRACTICE OF ARCHAEOLOGY

(SPONSORED BY DIGITAL DATA INTEREST GROUP)

Computational techniques including visibility and least-cost path analyses and agent-based modelling have rapidly grown in archaeological research. While fruitful, this research focuses on a narrow range of themes, overlooking variability in the practice of archaeology. Archaeologists are aware of variation in archaeological investigations in patterns that are seen on local and national scales, yet we have only a partial understanding of how and why these patterns evolved through time. This situation has obscured the impact of such variability on our understanding of the past. While current efforts including the building of cyber-infrastructure acknowledge variability in sources of geographically-referenced information, they underestimate the social context of archaeology and the intersection of knowledge, space, and power, a key factor in the practice of archaeology. Who are the archaeologists and archaeological teams that carried out field investigations, what were their aims, and which methods and tools and technologies did they employ? Where and when did field studies take place and what weight was attached to these places of interest? To begin addressing these questions, this session calls for computational research broadly defined, on social dimensions of the practice of archaeology in any local, national, and regional context, covering any period of time.

[5] Forum · ARCHAEOLOGIES OF INCLUSION: TOWARDS A POLITICS OF ENGAGEMENT

(SPONSORED BY QUEER ARCHAEOLOGY INTEREST GROUP)

Racism, classism, homophobia, and similar "isms" continue to operate in archaeology, excluding not only people but the ideas, methods, and interpretations that comprise our discipline. This process reifies/even lauds the image (and practices) of an archaeology that is primarily white, heterosexual, upper-class, and male. Despite repeated calls from individuals, communities, and broader publics, archaeology continues to struggle to achieve what Anna Agbe-Davies (2010) calls "inclusive archaeology"—an archaeology that enables engagement with a diverse set of people and theoretical and social issues. Why have these calls not been embraced by archaeologists/archaeology more broadly? How are these 'isms' perpetuated systematically? Why do these calls for inclusion feel even more urgent in today's political and social climate? If we are to remain relevant as a discipline, then it falls upon us to embrace the radical dismantling of these oppressive systems to empower more voices in archaeology. This forum seeks to bring these conversations to the forefront and explore the ways to break down these structures, both past and present, as well as engage with broader publics. Participants will discuss successful inclusive efforts, barriers to inclusion, and posit ways to move archaeology toward a more engaged, inclusive community.

[6] Poster Session · SOUTHEAST

[7] Poster Session · ARCHEOLOGY OF THE SOUTHEAST I

[8] Poster Session · ARCHAEOLOGY OF THE SOUTHEAST II

[9] Poster Session - METHODOLOGIES FOR INTEGRATING EASTERN ARCHAIC FAUNAL DATABASES USING THE DIGITAL ARCHAEOLOGICAL RECORD (tDAR)

As part of multi-scalar research on the use of aquatic animal resources by Archaic period hunter-gatherers in the interior Eastern Woodlands, zooarchaeologists from multiple institutions are exploring the integration of Archaic faunal datasets that have been collected and analyzed over the last half century. As a first step in this research these zooarchaeologists, who have formed the Eastern Archaic Faunal Working Group (EAFWG), have uploaded their faunal databases into the Digital Archaeological Record (tDAR), a digital repository for archaeological information maintained by Digital Antiquity. Initially these zooarchaeologists have been concentrating on uploading their datasets and making them usable in tDAR. This group also has been exploring database comparability with respect to taphonomy and context, and developing proxies for environmental and demographic change. Meanwhile, the computer scientists at tDAR have further streamlined the integration tools available through tDAR. The posters in this session present the capabilities of tDAR for database integration, the researchers various experiences in working with tDAR, and with the problems of database comparability as well as possible methodologies for modeling Archaic demographic change. Although there has been a definite learning curve, this work suggests that faunal database integration can be used to address important archaeological questions.

[10] Poster Session - HERITAGE VALUES IN CONTEMPORARY SOCIETY

(SPONSORED BY SAA POSTER SUBMISSION TASK FORCE)

Heritage values have an important role to play in contemporary society in areas as diverse as economic development; indigenous claims and rights; political agendas and ideologies; armed conflict; poverty reduction; sustainable development and the law; and legal and legislative systems. However, incorporating heritage values into contemporary society requires applying legal, ethical, cultural, and scientific perspectives to meet cultural heritage concerns. It is critical that this is done in a manner that is accountable, sustainable, inclusive, and does not compromise the quality of life for future generations. This allows heritage values to compete with other agendas while at the same time allowing different ways of viewing the world, including the past, to coexist.

This thematic poster session consists of posters that draw upon heritage values on a worldwide scale in terms of defining heritage policies and issues and articulating the need for effective, sustainable, and responsive cultural heritage and economic policies that can help to effectively develop best practices; be responsive to crisis or conflict situations on a global scale; ensure adequate funding at both the local, national, and international levels; and create new models, tools, and partnerships to help protect, manage, and enjoy our collective cultural patrimony.

[11] Symposium - PUBLIC ENGAGEMENT AND EDUCATION: DEVELOPING HERITAGE STEWARDSHIP

The biggest ally and advocate for the preservation and protection of archaeological materials is an informed public. Educating young students about the importance of ancient cultures, maintaining a lifelong dialog between archaeologists and the general public, and involving people in their own histories are essential for developing a sense of heritage stewardship. Presenting accurate archaeological information through various hands-on experiences, easily accessible digital data, and continuous learning opportunities bring archaeology into the everyday lives of all learners where they can develop respect and passion for the discipline. Participants in this session will share effective approaches for educating and engaging non-specialists about the field of archaeology in order to foster a shared responsibility for preserving the world's collective heritage. Topics include discussions of K-12 curricula and service learning programs, approaches to teaching and developing undergraduate and graduate heritage studies, examining adult and senior enrichment programs as venues for archaeological education, and inspiring public awareness and action to protect heritage through the involvement of local residents, the use of curated materials, and the dissemination of digital data.

[12] Symposium - A NEW ARCHAEOLOGICAL FRONTIER: URBAN SETTLEMENTS AND LANDSCAPES IN KURDISTAN, NORTHERN IRAQ

The past four years have seen a renaissance in the archaeology of Mesopotamia. Although fieldwork has been suspended in Syria, and most of Iraq continues to be unsafe, the autonomous Kurdistan Region of Iraq has become a welcome home for new research into some of the most important questions of early social complexity. This session brings together new scholarship that bears on questions of early urbanism, imperial power, settlement patterns, and landscape evolution.

[13] Symposium - TOWARDS A GLOBAL UNDERSTANDING OF OCHRE USE: METHODS, DEFINITIONS, AND APPLICATIONS

(SPONSORED BY THE SOCIETY FOR ARCHAEOLOGICAL SCIENCES)

The term "ochre" is one of the most poorly defined categories of material culture. Broadly speaking, archaeologists tend to identify any iron-containing rock, mineral, or soil capable of producing a colored streak as ochre. This is at best an incomplete definition and at worst is so imprecise that it may hinder meaningful research. Ochre has been reported in many examples of early human symbolic behavior. The use of ochre, however, is a widespread phenomenon represented in cultural heritage from all inhabited continents and spanning hundreds of thousands of years through present day. Some of the best known roles of ochre include rock art pigments, cosmetics and skin protectants, animal hide preservatives, and grave goods.

The dramatic growth of the archaeological sciences in the last 20 years has resulted in unprecedented opportunities for studying ochre in a quantitative manner. However, effectively applying these increasingly accessible techniques requires standardization of terminology and better sharing of methodological advances across disciplinary and national borders. This session will represent a first step towards achieving these goals by fostering communication among researchers with a keen interest in this unique form of material culture and by providing an opportunity to discuss an anthropological definition of ochre.

[14] Symposium - NEW DATA FOR OLD PROBLEMS: RECENT APPROACHES TO ARCHAEOLOGICAL RESEARCH AT

CARIBBEAN LOWLANDS

The region historically and geographically considered as Caribbean Lowlands encompasses a great diversity of terrestrial and aquatic environments and diverse socio-political processes as well, from the early agricultural societies until the occupation of Spanish colonial settlements. This symposium proposes to discuss the theoretical and methodological contributions made by lithic analysis, zooarchaeology, paleoethnobotany, archeometry, and historic archaeological studies, referring specifically to aspects such as paleoenvironmental reconstruction, subsistence economies, and human managing aquatic environments, among others. In this context, we aim to unite a group of presentations that project specific investigations, in search of comparative patterns of the use fauna, flora, and environment from the formative around 6000 years B.C. to eighteenth century. The ultimate goal of the symposium is to realize a balance that permits to identify strengths, weaknesses, and perspectives, in the archaeology of the Caribbean Lowlands. With this goal, we are trying to establish bases to build regional inventories of the sites where traces of human-environment interaction have been found, and to promote comparative studies.

[15] Symposium - MESOAMERICAN PAINTING: SOCIAL MEMORY ON VIRTUAL DISPLAY

Painting traditions in Mesoamerica provide an essential resource for understanding precolumbian culture and the interplay between audience and content. Murals on public display convey political and religious messages designed to inform the community and visitors from afar. Other forms of mural paintings are more private, conveying esoteric messages for elites. Similar content can be found in the ritual codices, especially the Maya codices and the Borgia Group manuscripts. These painted screenfolds suggest an interchange of elite knowledge about religion, natural history, and prognostications for daily life. Local rulers may have been the guardians of Mixtec codices recording information about history, religious rituals, royal lineages, and political events dating from precolumbian times through the sixteenth century. Colonial period codices of Central Mexico, recognized as a blend of Postconquest and precolumbian traditions, are a rich repository of information on historical events and religious beliefs designed for a restricted audience of priests and elites. As a broad tradition, Mesoamerican paintings can be seen as an important key to understanding how the message conveyed relates to the intended audience, and how the paintings themselves record the social memory of individual communities.

[16] Symposium - CROSSING FRONTIERS OF DISCIPLINES AND COUNTRIES. A SYMPOSIUM HONORING EILEEN JOHNSON

We propose to honor the career of Eileen Johnson, because we believe her to be a "complete scientist" who goes beyond pragmatic training and theoretical issues to include public awareness and issues of ethics. During the course of her career, she has integrated some disparate disciplines including archaeology, zoology, taphonomy, geology, and museum science. Her 45-year career has primarily been devoted to interdisciplinary research on human-environment interactions on the U.S. Great Plains, emphasizing human subsistence, vertebrate taphonomy, and the reconstruction of Quaternary paleoenvironments. She has also applied these perspectives across the country and across the Americas. She has spent her professional career at the Museum of Texas Tech University, where she built a regional interdisciplinary Quaternary research program based around the Lubbock Lake archaeological site. In the museum, she also worked as a research scientist, curator, professor, and even director. In addition to her meticulous research, she has been closely involved with the care of the anthropology collection at the museum, working with students and peers, and eager to share what she learns with the public. The aim of this symposium is to highlight the many contributions Eileen has made to Great Plains archaeology and to interdisciplinary research.

[17] Symposium - CHACO AND HOPEWELL: RETHINKING "INTERACTION SPHERES" THROUGH MULTISCALAR NETWORK ANALYSES

Chaco and Hopewell are two of the most well studied archaeological regions in North America. Although Chaco is often compared to Cahokia, comparison to Hopewell brings out important ways in which extensive regional connectivities were formed through the intersection of religious, political, and economic networks. Both societies show evidence of periodic, eventful monumental construction; spatial connectivity through roads/causeways; long-distance procurement of materials; production and deposition of large quantities of inalienable objects; spatially distinctive collective burials; and the replication of architectural units and spatial communities across large areas. Although they differ in many ways, the term "interaction sphere" has been applied to both regions but this term is amorphous and sidesteps the ways in which materials and practices were embedded within multiple kinds of networks and their historical relationships. Current relational approaches in archaeology, including formal network analyses, offer alternative ways of looking at social and spatial connectivities, especially when combined with theoretical approaches that foreground how religious ritual, ideology, territoriality, social diversity, and inequality intersect. The participants in this session address these connections to provide multiscalar interpretations of the Chaco and Hopewell worlds, their origins, and their transformations.

[18] Symposium - MEDIATING SPIRIT WORLDS IN NATIVE NORTH AMERICA

(SPONSORED BY ARCHAEOLOGY DIVISION, AMERICAN ANTHROPOLOGICAL ASSOCIATION)

This session considers archaeological materialities from a variety of timescales in order to explore indigenous ontologies in North America. We are interested in how physical and spiritual worlds were embodied and constituted with material culture in particular historical moments and over longer periods of time. The focus is on the discursive relationship between lived and historicized ontologies. We seek to draw out the diversity of spiritual existences in the history of Native North America by interrogating how people, objects, and landscapes were inscribed with meaning, memory, and belief. We include studies from across the continent ranging in temporal focus from deeper eras of prehistory to colonial times. Some case studies explore how spiritual practices endured or transformed in the face of drastic historical ruptures such as cultural invasion and violent or otherwise forced religious proselytization. Others take a long-view perspective, asking how ontologies developed and transformed across wide expanses of time. The juxtaposition of timescales offers new insights on the nature of cultural continuity and change in Native North America, while the geographical breadth of the session allows comparison of diverse indigenous ontologies and the ways in which they framed, historicized, and related persons, spirits, animals, plants, and things.

[19] Symposium - ARCHAEOETHNOBOTANY AND HOUSEHOLD CONTEXTS

This session is broadly focused on archaeoethnobotanical remains associated with household contexts, including both microbotanical and macrobotanical datasets. The session also includes ethnographic work as a means of adding perspective to ethnobotanical research. Presenters discuss the actions and behaviors that led to the deposition of particular remains, and/or what these remains indicate about the state of the ancient environment and past subsistence strategies. Secondly, as this session is not focused on a particular geographic region, it is meant to facilitate an exchange of methods and interpretive frameworks between scholars working on datasets from different geographical regions.

[20] General Session - REGIONAL ARCHAEOLOGY IN MESOAMERICA**[21] Symposium - AFTER ANZICK: RECONCILING NEW GENOMIC DATA AND MODELS WITH THE ARCHAEOLOGICAL EVIDENCE FOR PEOPLING OF THE AMERICAS**

The past two years have witnessed the publication of a series of ancient genomes that illuminate the peopling of the Americas: the Anzick infant, the Malt'a boy, and Kennewick Man. Along with similar data from later Holocene skeletal samples and extant Native American populations, these genomes show that a single small but diverse founder group, ancestral to all Native populations south of the Arctic, left Siberia after 23,000 cal B.P. and crossed Beringia about 15,000 cal B.P. Is it possible to reconcile the new genomic data with putative evidence of pre-Clovis or non-Clovis archaeological cultures south of the ice sheets before 14,500 cal B.P.? Can archaeological and genomic data be unified into a consistent model of the peopling process?

[22] Symposium - PARTING THE RED SEA: LATE PLEISTOCENE LITHIC VARIABILITY AND HUMAN DISPERSALS IN THE HORN OF AFRICA AND ARABIA

(SPONSORED BY SOCIETY OF AFRICANIST ARCHAEOLOGISTS)

The last two decades have witnessed the discovery of numerous archaeological sites in the Horn of Africa (Djibouti/Eritrea/Ethiopia/Somalia) and Arabia ranging in age from OIS 5-3, ~125-29,000 ka. Many are stratified cave, shelter, and open-air sites encompassing an impressive array of MSA-LSA/MP-UP flaked and groundstone artifacts, fauna, and more rarely fossilized remains of *Homo sapiens*. Against a backdrop of extreme fluctuations in paleoenvironments ranging from lofty glaciated peaks to scorching deserts, the sites reveal a high degree of spatio-temporal lithic technological diversity. Some sites on both sides of the Red Sea and Gulf of Aden show clear signs of lithic technological connections, while others in Arabia show more affinity with the Eurasian Middle Paleolithic than to any Arabian or African tradition. Sites in the Horn indicate considerable intra-regional variability, including possible western Ethiopian connections with Sudan. Explanations for this lithic diversity are many, but include genetic evidence for hominin dispersals through and across Africa into Arabia, and back again. This symposium brings archaeologists working in the Horn and Arabia together for the first time to discuss how these new data provide important new insights into the Late Pleistocene evolution and global dispersal of *Homo sapiens* and "modern human behavior."

[23] Symposium - CERAMICS, IDENTITY AND REGIONAL INTERACTION IN THE LOWER AMAZON

The lower Amazon region has a diverse and complex precolonial history, with a number of cultures being identified by archaeological research mainly through study of different ceramic complexes. Some of them are among the oldest ceramics in the Americas, while others have emerged just before the European conquest. Some styles developed out of large and complex chiefdoms, such as Marajó and Santarém, while others are related to small, local settlements. Given these scenarios, recent research has been struggling to both understand the enormous diversity of ceramic styles and to differentiate local from regional and/or pan-Amazonian traits; ephemeral from persistent styles; and hybrid and flexible repertoires as both the result of and a vector for different types of interaction spheres (such as exchange networks, ethnic and political alignments, war alliances, competition for managed territories, migrations, etc.). This session will explore both technological and symbolic aspects of ceramic production, use, and discard to advance understanding of the role of ceramics in identity building and regional interaction dynamics.

[24] Symposium - THE BIOARCHAEOLOGY OF FRONTIER AND BORDERLANDS

This session aims to explore how people in the past might have maintained, created, or manipulated their identity, while living in a place of liminality, stuck in between worlds. The zones of "in-betweenness," of demarcation between two or more spheres of influence, is a very dynamic and potentially violent place. This session will look at how different groups stuck in these zones were affected, how they interacted with the different worlds, how they lived their lives on the "edge." The cases presented will address questions of how living on the frontier might have affected the health and disease of these groups, how conflict and violence might have been expressed, how social inequalities might have been manifested. How did these groups maintain their identity? What overall effect did the "frontier" have on the existence of those who called it home? The cases can address situations where the people involved might not have lived permanently in the borderland zone, but had extensively interacted with it, or were deeply marked by it. A frontier can be both physical and ideological, an end and a beginning; it means different things to different people and it can affect groups living on opposite sides differently.

[25] Symposium - ON THE MOVE: ARCHAEOLOGICAL APPROACHES TO CHILDREN AND CHILDHOOD

(SPONSORED BY SOCIETY FOR THE STUDY OF CHILDHOOD IN THE PAST)

The archaeology of children and childhood has been a dynamic field of investigation since the late 1980s. Its practitioners recognize that the study of childhood is, in fact, the study of society as a whole. It is also an inherently interdisciplinary undertaking, as archaeologists are required to integrate into their analyses a diverse array of archaeological evidence—including material culture, funerary practices, human skeletal remains, built environments, and landscapes—informed, but not restricted, by the insights of a range of disciplines, including history, sociology, anthropology, and ethnography. This session explores children and childhood in the context of an array of social, institutional, bodily, and geographical transformations, such as

migration, political change, physical growth, progression through the lifecycle, and entry into working and institutional life. It will examine the ways in which social, political, and economic transformations impact on children, and how childhood experience, in turn, informs and is central to those broad processes. The session is organised into three interconnected strands which address, in turn, bioarchaeological approaches to children's identities and experiences; funerary evidence and biocultural approaches to childhood experiences; and the material culture of children's work, play, and learning environments.

[26] Symposium - NUTS AND BOLTS OF THE REAL "BUSINESS" OF ANCIENT MAYA EXCHANGE (PART 1)

Studies of ancient Maya political economy are now moving past decades of debate over broad and vague concepts of the "existence" of broadly defined markets, disembedded palace economies, unspecified modes of exchange, and state control versus autonomy or heterarchy. The evidence now emerging from excavations, technical analyses, epigraphy, and ethnohistorical analogy allows us to reexamine the building blocks underlying Maya political economies, including specific production activities, mechanisms of distribution (gifting, tribute, marketplace exchange, official bureaucracies), goods of low, middle, and high value, the social identities of producers, merchants, and officials, and variation in the location and function of economic features within sites or regions. Papers in this session illustrate ways in which the nuts and bolts of Maya economies contributed to an articulated and complex economy that bound together particular individuals and social groups across geopolitical units of varying scales. The session's papers emphasize sound empirical data and clear links to grounded research questions of the sort needed to reconstruct a nuanced model for dynamic precolumbian Maya economies.

[27] General Session - COMMUNITIES NEIGHBORHOODS AND ARCHITECTURE IN MESOAMERICA

[28] Symposium - 2016 FRYXELL AWARD SYMPOSIUM: PAPERS IN HONOR OF ELIZABETH J. REITZ

(SPONSORED BY FRYXELL AWARD)

Elizabeth J. Reitz is the recipient of the 2016 Fryxell Award for Interdisciplinary Research in Archaeology. The Fryxell Award is presented to a scientist in recognition for excellence in interdisciplinary research that significantly has contributed to American Archaeology. The 2016 Fryxell Award specifically recognizes a scholar who has made significant contributions in the application of the zoological sciences in archaeology. Dr. Reitz has a distinguished career as a zooarchaeologist. Her zooarchaeological research embodies interdisciplinary scholarship, bridging studies of human-environmental relationships in the past with topics of global concern in the modern world. Her pioneering work focuses on developing analytical methods that make zooarchaeological data compatible, accessible, and relevant across disciplines. Her research spans the terminal Pleistocene to postcolumbian era, from the United States to the Caribbean and South America, and has been featured in numerous books, monographs, journals, and zooarchaeological reports. This symposium, sponsored by the Fryxell Award for Interdisciplinary Research, highlights Dr. Reitz's contribution to American Archaeology through her zooarchaeological research paradigm.

[29] Symposium - COMMUNITY MATTERS: ACTIVE INVOLVEMENT WITH TRIBAL COMMUNITIES, THE MANY ROLES OF TRIBAL HERITAGE MANAGEMENT

(SPONSORED BY INDIGENOUS POPULATIONS INTEREST GROUP AND COMMITTEE ON NATIVE AMERICAN RELATIONS)

Throughout the United States, individuals working in tribal historic preservation maintain a variety of roles, allowing them to undertake countless projects aimed toward preserving cultural resources for their tribe. A wide range of projects encourage active involvement from the tribal community, whether it is through in-person interviews or tribal field schools, and community input is crucial to understanding what tribes deem significant and necessary to preserve. Each project varies between tribes and is specific to the needs and wants of each tribal community. This forum will bring together those working in tribal historic preservation across the country to discuss the various roles they perform and the different projects their tribe finds important. Sharing these endeavors will demonstrate the broad spectrum of cultural values that exist between tribes so that tribal expectations and involvement in heritage management is better understood.

[30] Symposium - NAGPRA APPLIED: STORIES FROM THE FIELD ON ITS 25TH ANNIVERSARY

(SPONSORED BY THE COMMITTEE ON REPATRIATION)

November 16, 2015, marked the 25th anniversary of the passage of the Native American Graves Protection and Repatriation Act (NAGPRA). The Society for American Archaeology's (SAA) involvement with NAGPRA precedes the law's passage. It helped build a coalition of scientific, museum, and Native American groups that supported NAGPRA's enactment and was one of the key organizations involved in drafting this groundbreaking legislation. For more than two decades, tribes, museums, and archaeologists have worked together to implement NAGPRA and repatriation is integral to the professional lives of a number of SAA members. This session will look back on SAA's pivotal role in NAGPRA's passage and continued involvement in its implementation. SAA members who work in range of settings—academia, government agencies, museums, the private sector, tribal governments—will describe their experiences working with this law, assess its impact after 25 years, and contemplate its future.

[31] Symposium - SOCIAL COMPLEXITY IN THE CENTRAL ANDEAN REGION: CURRENT RESEARCH ON THE INITIAL PERIOD AND EARLY HORIZON - PART 1

The Initial Period is often considered an outgrowth of trends that first appear in the late Preceramic Period. However, archaeological research shows that the Initial Period was in fact a time of significant cultural dynamism, which included the first appearance of pottery, expansion of agricultural systems, and a proliferation of monumental public architecture. Meanwhile, Early Horizon studies have traditionally focused on the Chavin phenomenon, obscuring broader trends in cultural trajectories. This session is aimed at exploring the archaeology of the second and first millennia B.C., with a particular focus on recent research undertaken throughout coastal and highland Peru over the last 10 years. Topics that will be addressed in this session include

chronology, the emergence of pottery technology, domestic and village life, ritual and debates centered on sociopolitical organization.

[32] Symposium - AFTER THE VOLCANO ERUPTED: PAPERS IN HONOR OF DR. PAYSON SHEETS (PART 1)

The UNESCO World Heritage site of Cerén, El Salvador, has fueled the archaeological imagination for decades with its superb preservation of earthen architecture, agricultural fields, and in situ artifacts buried beneath multiple meters of volcanic ash. Payson Sheets has tirelessly led investigations of this Classic Period Maya community enhancing our understanding of ancient commoners, household archaeology, social and political organization, diet and subsistence, among other topics. The contributions of Sheets' work have wide-ranging methodological and theoretical impacts throughout archaeology. Honoring the work of Sheets, participants contribute presentations of their original research in areas influenced by Payson's work and highlight the extensive contributions of his research across the discipline. In Part 1 of this two-part symposium, participants emphasize Payson's contributions to archaeology through his extensive decades of archaeological exploration in El Salvador.

[33] Forum - "DESTRUCTION" AND THE RHETORIC OF ARCHITECTURAL EXCAVATION

Recent advances in 3D metric survey have revolutionized recording during excavation. SFM and laser scanning are now used to document simple and complex features with unprecedented levels of precision. The main impact of this has been the acceleration of field operations. The revolution in recording is allowing us to do the same things we have always done, but faster and in a slightly different order. Not much of a revolution!

The fundamentals of stratigraphic excavation were established a century ago. Reflecting contemporary practice, valuable portable objects were removed, and less convenient architectural elements left behind. The widespread custom of not removing features like walls and floors, even after their thorough documentation, persists. The implicit logic preservation in situ is that architecture is more significant and rich in un-captured information than soil deposits or cuts. New methodologies and current ethics and theory invite a critical re-examination of this de facto policy of architectural preservation in situ. Is it still justifiable to assign such absolute preference to the conservation of walls and floors and, if so, on what grounds? Is material preservation the only option? We bring together academic and CRM archaeologists, digital humanists, site managers, and designers to explore these themes.

[34] Symposium - HOPEWELL CEREMONIAL LANDSCAPES SEEN THROUGH THE LENS OF LARGE-SCALE GEOPHYSICAL SURVEYS: BIG DATA, BIG OPPORTUNITIES, BIG CHALLENGES

This symposium presents results from recent large-scale geomagnetic surveys of Hopewellian mound and earthwork complexes in Ohio, including several at Hopewell Culture National Historical Park, currently under consideration for inscription on the World Heritage List. Until now, these sites were best-known only from nineteenth century maps. Landscape-scale geophysical surveys are becoming increasingly cost-effective due to recent advances in instrumentation. The availability of multi-sensor arrays and real-time positioning systems permits us to widen our field of view and place individual features, sites, and monuments in landscape context. The recent surveys add rich texture and detail to earlier maps, and reveal many heretofore hidden features of these Hopewell ceremonial landscapes. These new datasets are fertile grounds for novel interpretations, and they harbor opportunities for greater public appreciation of, and engagement with this Native American contribution to World Heritage. At the same time, the large scale of these datasets presents new challenges for data processing, analysis, and management. This symposium will explore these issues with a view toward advancing archaeological theory and practice in step with advances in archaeo-geophysical instrumentation. Further, this symposium features an international team of participants, promising new perspectives and broader contexts for our understanding of Hopewell ceremonial landscapes.

[35] Symposium - STRATEGIC APPROACHES TO DIGITAL PUBLIC ARCHAEOLOGY

(SPONSORED BY PUBLIC ARCHAEOLOGY INTEREST GROUP)

Archaeologists have rallied around digital public archaeology and, while scholarship is growing in this area, a more critical approach is vital. The pervasiveness of digital technologies is clear: approximately 87 percent of American adults use the Internet, 64 percent own a smartphone, and 58 percent have a Facebook account (Pew Research Center). Such technologies are an important tool for archaeologists and the discipline's presence online is already enormous. However, an abundant presence does not equate success. We must do more than join the digital bandwagon; we need to take the ideas and goals that have been a part of public archaeology and embed them in digital platforms. Strategic use of digital technologies will have the greatest impact in supporting our larger interests. To produce measurable results, digital public archaeology projects require goals, strategy, intentionality, and assessment. We must apply the same academic rigor to public archaeology as we do in archaeological research so we understand what success in these projects actually looks like. Unfortunately, few resources exist to support these efforts. This session seeks to address that gap by sharing research and case studies on digital public archaeology projects and strategy from project inception through evaluation.

[36] Poster Session - MID-ATLANTIC

[37] Poster Session - TEACHING, HERITAGE, OUTREACH

[38] Poster Session - BIOARCHAEOLOGY, TAPHONOMY

[39] Poster Session - METHOD AND THEORY

[40] Poster Session - TEACHING ARCHAEOLOGY: HIGHLIGHTS FROM THE COMMITTEE ON CURRICULUM AND THE TEACHING ARCHAEOLOGY INTEREST GROUP*(SPONSORED BY CURRICULUM COMMITTEE AND THE TEACHING ARCHAEOLOGY INTEREST GROUP)*

Archaeology is a subject that easily sparks interest among college students. However, it is often difficult to construct activities which teach methodological and theoretical concepts of archaeology within the four walls of a classroom. Archaeologists rarely get a chance to discuss effective classroom activities. This poster session seeks to provide a forum to do exactly that. The SAA Committee on Curriculum is working to provide a digital space for innovative classroom activities to be provided to educators. This session will serve as a platform to show the kinds of activities that will be made available on this new SAA webpage and foster awareness of the effort so that more activities will be submitted. Activity hand outs and all other materials will be made available during the session, along with recommendations for how many and for which students these activities are most appropriate.

[41] Poster Session - PEOPLE, POTTERY, AND PETROGRAPHY: RECENT RESEARCH IN CERAMIC PETROGRAPHY

Ceramic petrography has grown from an approach adapted from material scientists to a common method of analysis in archaeology. The combination of both qualitative and quantitative data in petrographic analysis allows it to be applied in a variety of studies, ranging from ceramic manufacturing techniques to the interpretation of social phenomenon, such as exchange, population dispersals, and emulation. The posters in this session are a selection of recent research centered on ceramic petrography from both small-scale and complex societies in the Americas, as well as the western Mediterranean. The wide geographic focus of this session highlights the potential for petrographic research to address complex social questions. In this session, ceramic petrography is used to investigate transitions in social formations within groups and the interactions between different groups, examine the physical properties of coarse crystalline rocks and other manufacturing techniques, and highlight additional sourcing techniques and tools currently used by researchers.

[42] Poster Session - SPECIALIZED ANALYSES OF CULTURAL MATERIALS AND FEATURES FROM PRE-CONTACT NATIVE AMERICAN SITES IN NEW ENGLAND*(SPONSORED BY THE PUBLIC ARCHAEOLOGY LABORATORY, INC. (PAL))*

New data from protein residue, phytolith, and radiocarbon analyses have contributed to our understanding of pre-contact Native American subsistence procurement practices and settlement patterning in southern New England. Posters in this session illustrate recent cultural resource management (CRM) investigations conducted by The Public Archaeology Laboratory, Inc. (PAL).

[43] Symposium - PUEBLO ARCHAEOLOGY OF THE GREATER TAOS REGION: WE'VE GOT A LOT TO LEARN

Archaeological research in the Greater Taos region has a long and illustrious history. The Northern Rio Grande and Chama valleys of New Mexico have seen extensive research for more than 140 years and much has been learned. Despite this long record of research, numerous gaps remain in archaeologists' understanding of important events and processes in the region. For example, how early was the region settled by Puebloan people? Was the huge expansion in regional population in the late 1200s a result of migration or local demography? In this symposium, we explore these gaps and offer suggestions into how they might be filled. Our main goal in this symposium is to provide a roadmap for archaeological inquiry in the Northern Rio Grande and Chama valleys for the next 10 years.

[44] General Session - ARCHAEOLOGY OF THE OLMEC**[45] Symposium - EVERYBODY ELSE: THE PREDECESSORS AND CONTEMPORARIES OF THE MOCHE ON THE NORTH COAST OF PERU**

Many research programs have added to the knowledge of Moche-ness, but relatively few have contributed to our understanding of what came before and alongside the Moche phenomenon in the north coast region of Peru. Papers in this session will focus on the predecessors and contemporaries of the Moche throughout the region. Rather than focus on specific theories or methodologies, papers will focus on a broad range of topics such as mobility, foodways, style and identity, and spatial analysis of settlement and artifact distributions.

[46] General Session - CERAMICS IN MESOAMERICAN ARCHAEOLOGY**[47] Symposium - GESTURES ACROSS A CONTINENT: HANDS, COMMUNICATION AND MEANING IN THE ANCIENT AMERICAS**

Gestures constitute a fundamental part of human behaviour and are rich evidence of a culture's ideology, identity, beliefs, and practices. Although gestures are visually and materially evident in the archaeological record, an approach to gesture that considers different traces of bodily actions and which compares gestures across cultural regions in the Americas has been notably absent. This session addresses this concern by exploring the symbolism and significance of gestures in ancient and contemporary indigenous cultures of North, South, and Central America for the purposes of better understanding the role of hands in communication and meaning in both space and time. By emphasising cross-cultural and comparative perspectives, this session will be pivotal in facilitating a dialogue about gestures between research fields and disciplines, including archaeology, anthropology, art history, and linguistics. Topics will include representations of hands in art; embodied gestures and material culture; interpersonal behaviours (including gestures accompanying speech and Sign Languages); and the performance of

gestures in ritual practices. As a whole, this session highlights the importance of gestures for comprehending the symbolism and significance of communication and meaning in the ancient New World and contributes to wider discussions of bodily communication in societies, both past and present.

[48] Forum · THE FUTURE OF AMERICAN ARCHAEOLOGY: ENGAGE THE VOTING PUBLIC OR KISS YOUR RESEARCH GOODBYE!

Recently, we have seen attacks on publicly-funding archaeology in the U.S. These attacks occurred at the state level, where governors and state legislatures tried to defund or outright eliminate state archaeological programs and institutions. At the federal level, we have seen archaeology showcased as a waste of public tax dollars, attempts to defund archaeological research, and legislation to move federal projects forward without consideration of impacts on archaeological resources. We expect these trends to continue in the future. In most cases, a vigilant network of historic preservation and archaeological organizations has thwarted these attacks. The public, however, largely remains an untapped ally. As a discipline, we have not built a strong public support network. We have not demonstrated the value of archaeology to the public, beyond a scattering of educational and informational programs. In addition, when asked to participate in a national effort to celebrate the 50th anniversary of the National Historic Preservation Act, we found that archaeologists have great difficulty conveying to the public the value and benefit of 50 years of federally-mandated archaeological research. A panel of archaeologists whose work focuses on public engagement will provide brief presentations addressing these issues, followed by an open discussion.

[49] Symposium · SHELL MIDDEN MICROARCHAEOLOGY UNRAVELED

Shell middens are complex anthropic constructions crossing many chronologies and territories. They are one of the most important contexts to interpret the formation of the archaeological record and have been associated with different human activities around the world. Therefore, for such complex deposits, micro-scale analyses are of the utmost importance to better understand site formation, site function, human behavior, paleogeography, and paleoenvironment.

The archaeological record goes beyond what is seen with the naked eye and is a more complex reality where the minutiae are important sources of information. This approach is increasingly interdisciplinary with contributions from biology, geology, chemistry, and even physics. One of the greatest obstacles has been the difficulty of integrating macro- and microscopic records, which has been alleviated by a new generation of archaeologists specializing in geoarchaeology (micromorphology, geochemistry), zooarchaeology (sclerochronology, isotopes), archaeobotany (charcoal, seed, fruit, pollen and phytoliths), residue analysis, and use-wear.

Site formation and function are universal questions to all shell middens, regardless of their different chronologies and locations. We aim to bring together different methodological approaches to the study of the archaeological record in order to illuminate the singular source of information that shell middens are.

[50] Symposium · RECENT RESEARCH AT THE CEREMONIAL CENTER OF TIBES, PONCE, PUERTO RICO

This symposium presents the latest results of analyses realized by the Proyecto Arqueológico del Centro Ceremonial de Tibes, Puerto Rico. Tibes is the earliest known civic-ceremonial center in the Greater Antilles and has been interpreted as one of the earliest political and economic centers in the Caribbean and first site of institutionalized stratification in the region. The main purpose of our research is the study of the social and cultural factors that led to the development of this center. The symposium includes presentations on recent excavations and findings of paleoethnobotanical, faunal, lithic, osteological, bioarchaeological, and regional analyses.

[51] Symposium · MULTI-DIRECTIONAL COLONIALISM: APPROACHES TO STUDYING GLOBAL INTERACTIONS

Colonial settings are marked by cultural exchange in many directions, yet studies of colonialism usually highlight the relationship between motherland and territory with a specific focus on the colonized. In this session, we explore colonial environments as settings for a multiplicity of cross-cultural interactions by presenting research on a range of geographical locations and periods. We aim to discuss the multi-directional nature of these social exchanges, in order to move beyond the static interpretive frame of colonizer and colonized. Participants will consider questions such as how changes in colonial territories rippled back to the motherland; the role of proximate, non-colonized cultures living on the edges of imperial activities; the multi-directional nature of material culture change; and how peoples connected to colonial exchanges developed new notions of heritage and identity. By discussing these themes from disparate eras and locations, we hope to add a new facet to the rich ongoing scholarship on colonial studies, and also demonstrate new modes of approaching the study of culture contact on a global scale.

[52] Symposium · "SKULL CULTS" AMONGST HUNTER-GATHERERS?

While some aspects of 'skull cults' appear to be similar in hunter-gatherers and small-scale horticultural and agricultural communities, the details of how they function in skull rituals and are integrated with other elements of human behavior vary. Small-scale farmers have long been known to exhibit an interest in the human head. Manifested as either trophy taking or ancestor worship, or both, the range of practices involving the human head have typically been understood in a context of maintaining or enhancing fertility, whether of crops, animals, or human populations themselves. Although the evidence is sparse, many of the same practices are found amongst hunter-gatherers, for whom such interests might appear less immediately relevant. Balance with the natural world is more often maintained by appropriate behaviour towards prey animals, and most anthropological discussions have been more concerned with how hunter-gatherers limit their reproductive potential, rather than seek to enhance it. Why, then, do we see a widespread interest in acts involving the human head amongst hunter-gatherers, ranging from trophy taking to various kinds of post-mortem manipulation? The papers in this session seek to document the range of these practices both archaeologically and ethnographically, and to discuss the possible underlying rationales.

[53] Symposium - AFTER THE VOLCANO ERUPTED: PAPERS IN HONOR OF PAYSON SHEETS (PART 2)

Payson Sheets has led research at the UNESCO World Heritage Maya site of Ceren, El Salvador, since its discovery in 1978, as well as a variety of projects throughout Meso- and Central America. The contributions of Sheets' work have wide-ranging methodological and theoretical impacts throughout archaeology. Symposium participants contribute presentations of their original research in areas influenced by Payson's work and highlight the extensive contributions of his research across the discipline. These papers tie together important aspects of reconstructing the past, such as the application of remote sensing to archaeology, the impacts of ancient natural disasters on human populations, the daily lives of commoners, advances in household archaeology, and progress in stone tool manufacture, production, and meanings. Holistic interpretations of the importance and contributions of all members of ancient societies, particularly commoners, have characterized Payson's influences on the field and will be reflected in the papers of this session. In Part 2 of this two-part symposium, participants emphasize Payson's contributions to the development of archaeological method and theory in Mesoamerica and beyond.

[54] Symposium - COMBATING INEQUALITY: ARCHAEOLOGY AND THE PRODUCTION OF CAPITAL IN THE 21ST CENTURY

Americans are in the midst of an intense debate over inequality. As wealth and status become increasingly concentrated in the hands of a few, many are asking how this situation came to be. In a post Occupy Wall Street era, Thomas Piketty's economic treatise *Capital in the Twenty-First Century* has topped the *New York Times* nonfiction Best Seller List. Moviegoers have flocked to economic documentaries, such as Robert Reich's *Inequality for All*. And, television pundits refer frequently to the 1 percent and the 99 percent, a new shorthand for the haves and have-nots. Pierre Bourdieu has suggested that such inequity derives, in part, from the unequal distribution of capital, be it economic, cultural, or social. According to Bourdieu (1986: 83), capital is "a force inscribed in the objectivity of things so that everything is not equally possible or impossible." Participants in this session examine whether archaeology can combat some aspects of contemporary inequality by producing forms of capital that benefit the communities for which we work. By doing so, participants explore concrete ways practicing archaeology can promote public welfare and foster social change.

[55] Symposium - UNDERSTANDING THE NATURE AND TIMING OF HUMAN RESPONSES TO ENVIRONMENTAL CHANGE

Archaeology is well suited for understanding how prehistoric societies responded to environmental change. Examples of such change can include processes directly and indirectly related to climate, such as temperature, precipitation, and rising lake or sea level, as well as others such as volcanism. Many environmental records are very highly resolved, with some approaching annual sequencing. However, archaeological chronologies have historically lacked comparable degrees of sensitivity. Recent advances in building and working with archaeological chronologies have increased the precision of these models, and are presently helping researchers understand the capacity for rapid and often significant cultural change in response to changing environmental conditions. One important result of these developments are new, enhanced understandings of prehistoric culture history and how local and regional sequences changed in response to different environmental conditions. Another result is the occasional opportunity to chart different responses across multiple regions to the same general environmental change. This session presents multidisciplinary datasets and methodologies from North and Central America that illustrate these processes of response and adaptation.

[56] Symposium - SOCIAL COMPLEXITY IN THE CENTRAL ANDEAN REGION: CURRENT RESEARCH ON THE INITIAL PERIOD AND EARLY HORIZON PART 2

The Initial Period is often considered an outgrowth of trends that first appear in the late Preceramic Period. However, archaeological research shows that the Initial Period was in fact a time of significant cultural dynamism, which included the first appearance of pottery, expansion of agricultural systems, and a proliferation of monumental public architecture. Meanwhile, Early Horizon studies have traditionally focused on the Chavin phenomenon, obscuring broader trends in cultural trajectories. This session is aimed at exploring the archaeology of the second and first millennia B.C., with a particular focus on recent research undertaken throughout coastal and highland Peru over the last 10 years. Topics that will be addressed in this session include chronology, the emergence of pottery technology, domestic and village life, ritual and debates centered on sociopolitical organization.

[57] Symposium - CERAMICS OF THE INDIGENOUS PEOPLES OF SOUTH AMERICA: STUDIES OF PRODUCTION AND EXCHANGE USING INAA

Indigenous ceramics from the continent of South America range from the common to the artistic with many types characterized by symbolic, religious imagery. In some areas, pottery was mass produced for the general population as well as the elite. Reliance on compositional data from instrumental neutron activation analysis (INAA) to study production and exchange practices of indigenous ceramics from the continent of South America has grown over the past two decades. In some instances, the data from other analytical methods have been integrated with data from INAA to extend the investigations toward more complex questions. In this symposium, several case studies will be presented, facilitating comparisons and contrasts between regions.

[58] Symposium - EXHIBITING MESOAMERICAN ARCHAEOLOGY IN THE EARLY 21ST CENTURY

In the first decade and a half of the twenty-first century, Mesoamerican archaeology remains in the Museum spotlight—most conspicuously in a proliferation of highly-touted traveling exhibits, but also featured in permanent galleries. This popularity suggests that the museum-going public has not yet satisfied its great curiosity and interest in the history and culture of Mesoamerica. For archaeologists, this presents a uniquely valuable opportunity to communicate new discoveries and understandings directly with the public through a dynamic medium. Yet assembling high quality exhibits continues to be challenging for a host of reasons. In particular, many cash-strapped museums are unable to fund the development of large exhibits and are employing fewer and fewer curators. In fact, many of today's "blockbuster" exhibits are put together by for-profit entities. This symposium assembles a group of researchers who will share their experiences curating recent traveling and permanent exhibits featuring Mesoamerican archaeology. Presenters will touch on a number of issues, including the business-

side of mounting exhibitions, strategies in communicating research effectively, ethical considerations, the politics of representation, collaboration with native communities, how exhibits may create new knowledge and spur the development of new research trajectories, and the future of exhibiting Mesoamerica.

[59] Symposium - NUTS AND BOLTS OF THE REAL "BUSINESS" OF ANCIENT MAYA EXCHANGE (PART 2)

It is time for scholars to work together to model the basic framework of Maya economies across time and space. This session moves beyond simple descriptions of broadly characterized "exchange" between "centers" or "states" by tracking the specific activities and features that bound economies together at different levels of the social hierarchy. A more relativistic approach highlights local variation and sidesteps the pitfalls of artificial dichotomies, ideal types, or presence/absence queries regarding key economic institutions. Papers in this session draw on diverse interdisciplinary categories of evidence essential for reconstructing a more accurate model of a range of specific economic activities that were potentially articulated with one another into complex and dynamic systems. We focus on specific evidence for agents, facilities, transport mechanisms, webs of debt, constraints and freedoms, strategies for and challenges to stability, and commodities that were made and exchanged according to gradations of value. These factors, among others to be evaluated, were the nuts and bolts that held society and economy together through the longue durée of Maya society. Important variation on the local level revealed by symposium papers will provide the dimensions that are necessary in moving toward a new synthesis.

[60] Symposium - HISTORICAL ECOLOGY, HETERARCHY AND MULTITEMPORAL DYNAMICS: PAPERS IN HONOR OF CAROLE CRUMLEY

In an ongoing career, so far spanning more than four decades, Carole Crumley has consistently delivered original frameworks for understanding the dialectic of human-environmental relations and her work has embodied the holism of anthropology. Documenting long-term interactions between historical and environmental circumstance and the social, political, and economic elements of land use practice, her research in Burgundy fostered new ways of seeing landscapes, the imperative of interdisciplinary and transdisciplinary study, the significance of historic climate change, and the value of multitemporal and multiscale approaches. In collaboration with her research partners, Crumley advanced the interdisciplinary theory and method of Historical Ecology. Her key concept of "heterarchy" is now applied to studies of societal and environmental resilience. Critiquing default presumptions of hierarchy allows scholars to better perceive social structural alternatives in the past that were successfully responsive to environmental constraints, and to imagine them for the future. Following her retirement from teaching at UNC-Chapel Hill, Crumley's work continues as director of the 'Integrated History and Future of People on Earth' (IHOPE) initiative, a global network of researchers based at Sweden's Uppsala University and uniting biophysical and social sciences.

[61] Symposium - EXPLORING 12,000 YEARS OF OCCUPATION, LAND USE, AND CONFLICT: ARCHAEOLOGICAL AND HISTORICAL RESEARCH SPONSORED BY THE MASHANTUCKET AND EASTERN PEQUOT TRIBES

The Mashantucket and Eastern Pequot Reservations in southeastern Connecticut have an extraordinarily rich culture history that together span over 12,000 years. Over the last 30 years, both tribes have generously supported a wide range of archaeological and historical research on Colonial and Native (Pequot) lifeways on and off the Reservations. This research has focused primarily on precontact occupations, documenting the richness and continuity of the Pequot presence on the reservations, the Pequot's contact, conflict, and interactions with European colonists, and the Pequot's continued survivance throughout the colonial era. These investigations have led to a better understanding of Native American experiences in southern New England and provided new opportunities for public education through scholarship, exhibits, and educational programs. This session highlights recent and ongoing research with papers focused on periods ranging from the Paleo-Indian to the Historic.

[62] Symposium - THE ROLE OF HIGH ALTITUDE LANDSCAPES IN THE PEOPLING OF THE NEW WORLD

Discussions of the "Peopling of the Americas" only rarely mention the high-altitude landscapes of the South American Andes, North American Rocky Mountains, or other mountainous regions of the western hemisphere. This needs to change, because recent research shows that First Americans used even exceptionally high altitudes as early as the terminal Pleistocene (i.e., nearly as early as they penetrated every other region of the Americas). This symposium showcases some of the earliest sites of high-altitude North and South America, in the process revealing the wide-ranging economic and spiritual importance of high mountains for First Americans. The session also includes papers exploring bioarchaeological and genetic data that illuminate and explain early migration patterns and physical challenges that First Americans overcame to utilize the very high altitudes they so clearly valued from the earliest moments of their arrival in the New World.

[63] Symposium - EXCAVATING THE MUSEUM: NEW RESEARCH ON OLD COLLECTIONS

(SPONSORED BY FIBER PERISHABLES INTEREST GROUP)

Most anthropology or natural history museums have hidden treasures in their collections, materials collected but not published or inadequately published. Many of these collections have never been completely analyzed or described or been used to address in-depth research questions. These overlooked artifacts, many of which date to the early years of our profession, warrant reexamination using current theoretical approaches and research methods. In this symposium, presenters working with older archaeological research collections of textiles, baskets, footwear, cordage, and other perishable artifacts, as well as more durable materials, discuss their new findings and interpretations of these long-forgotten resources.

[64] Poster Session - FROM CROPS TO STONES IN SOUTHWESTERN ARCHAEOLOGY

[65] Poster Session - SOUTHWESTERN ARCHAEOLOGY

[66] Poster Session - SOUTHWESN ARCHAEOLOGY II**[67] Poster Session - GENERAL SOUTHWEST II****[68] Poster Session - ARCHAEOLOGY OF THE VIRGIN BRANCH PUEBLOAN CULTURE**

Since 2006, archaeologists with the University of Nevada Las Vegas and the National Park Service have collaborated to explore the Virgin Branch prehistory of northwestern Arizona and southeastern Nevada. Posters in this session highlight recent findings from this ongoing project.

[69] Symposium - FROM DIRT TO BEHAVIOR: PAPERS IN HONOR OF DAVID B. MADSEN

The diverse contributions of David B. Madsen to archaeology and virtually all of its subfields are remarkable. In over 150 publications he has greatly enhanced our understanding of prehistoric peoples and the environments in which they lived. Among others, he has investigated the peopling of North America, Quaternary paleoecology, Pleistocene extinctions, the evolution of desert environments in western North America and western China, forager and farmer adaptive strategies and migration, and prehistoric insect procurement and use. Incorporating ceramics, pollen, fauna, lithics, and/or dirt, his interdisciplinary and theoretically-driven approaches have shaped how we investigate and interpret prehistoric biotic communities, climate change, and archaeological records, especially the human behaviors that created them. This symposium presents a similarly diverse collection of papers in honor of the significant and ongoing contributions of David B. Madsen.

[70] Symposium - BREAKING BOUNDARIES: EXPLORING COLONIALISM IN THE MODERN WORLD AND BEYOND

Over the last three decades, the archaeology of colonialism has reached a period of maturity under the direction of a generation of established scholars. The resulting knowledge and discussions have impacted the theoretical, political, and methodological landscape of archaeological practices and have opened up new avenues for comparative work within the field. However, much of this work has remained focused on discrete contexts associated with the "modern" world or with a particular set of "settler colonialist" encounters. This session seeks to explore whether the impacts of "colonialism" as a lens for archaeological analysis holds utility beyond such contexts. Specifically, we invite speakers to explore the potential applicability of the framework within diverse geographical, temporal, and social contexts that fall outside the traditionally delineated boundaries of colonial relations. The goal is not to propose a unified and unproblematic method of analysis; rather, it is an attempt to recover an intra-disciplinary dialogue, among at times disparate sections of the archaeological endeavor, centered on a common conceptual framework. In so doing we hope to highlight both the potential and limitations of applying the lens of colonialism to the archaeological record, but more importantly, the common ground that creates archaeology with a "capital A."

[71] Symposium - ASSESSING OUTCOMES IN PUBLIC ARCHAEOLOGY: IMPERATIVES, PERILS, AND FRAMEWORKS

(SPONSORED BY PUBLIC ARCHAEOLOGY INTEREST GROUP)

Public archaeology is an important means of advocacy and ethical practice for many archaeologists. In planning and seeking funding for such work, scholars consider the specific sociopolitical circumstances of their research area, including how they can assess the outcomes of their projects. Because public outreach and community-engaged practice is so context-specific, evaluation of public archaeology has not been a major topic of discussion. How and when is it appropriate to "evaluate"? And how is evaluation entangled with theoretical and ethical concerns about the role of archaeologists in society?

This session is dedicated to drawing together ideas and proposals surrounding evaluation in public archaeology. Topics in this session include: examples of outcome assessment within and between public projects, the ethical dimensions of assessment, theory and practice-driven discussions of how assessment functions within public archaeology projects and public outreach efforts, and proposed tools for assessing the broader impact of engaging non-archaeologists in archaeological work.

[72] Symposium - HUMAN-ENVIRONMENTAL INTERACTIONS IN THE MEDITERRANEAN BASIN

As a center of agricultural invention and a major route for the spread of early agriculture, the Mediterranean Basin has long been an area of research for those interested in the modification of the landscape by humans. Yet even before the arrival of agriculture, humans played an active role in transforming the Mediterranean Basin for millennia. Recent research challenges the notion of pristine, balanced, or stable social-ecological systems in the past by investigating: 1) recursive relationships between humans and ecosystems, 2) humans as actors in complex, non-equilibrium systems influenced by a variety of human and non-human drivers, and 3) long-term social and ecological change. Because the Mediterranean Basin represents a diverse range of cultures, adaptations, and interactions, it serves as a useful laboratory for a wide range of techniques and regionally centered research. This session showcases multiple perspectives used to tease apart the impacts and repercussions that occur within the dialectic relationship between humans and their surroundings. Our efforts will focus upon new computation methods, including agent-based simulation, geographical information systems (GIS), network analysis, climate modeling, and the integration of these techniques to address questions centered in the Mediterranean Basin.

[73] Forum - MARS FORUM - ADAPTING TO THE FUTURE: THE CHANGING ROLE OF CULTURAL RESOURCE MANAGEMENT IN THE MILITARY

(SPONSORED BY MILITARY ARCHAEOLOGY RESOURCES SUB GROUP)

The MARS sub group of the SAA was created in 2011 to support efforts to network and support archaeologists working in some aspect connected with the military. This ranged from professionals working for the U.S. Military at installations and training centers to professionals studying military archaeology and to those archaeologists working in disciplines or regions impacted by either combat or humanitarian operations. The goal of this 3rd official MARS forum is to discuss how cultural resource professionals are developing preservation strategies to integrate into a variety of military operational environments. A focus of the discussion is to address how military CRM personnel can share effective tools for management and expand their capability to educate and prepare soldiers for cultural heritage scenarios encountered outside their training environment.

[74] Symposium - "LET'S TALK ABOUT [COLLAPSE], BABY": EXPLORATIONS IN THE ARCHAEOLOGY OF SOCIETAL COLLAPSE

Societal collapse has long been a topic of archaeological discourse, and as a concept it continues to have contemporary relevance. We see it evidenced in discussions of climate change, in contemporary 'failed state' rhetoric, and in our fears about the future. But what does it mean to say a society has collapsed, and what are its material effects? What happens in the aftermath of collapse, and how is societal collapse similar across time and space?

This session explores the archaeology of collapse and its aftermath by bringing together a range of geographical, theoretical, and methodological approaches in order to facilitate a new discussion about collapse. Examples include studying how collapse operates at both local and regional levels; using small sites to talk about more overarching patterns; combining multiple datasets, methods, and/or theoretical approaches; and scaling up from specific data in order to develop theoretical models of collapse. Our goal is to consider collapse both in terms of specific historical trajectories—what does collapse look like at specific points in time and space?—and as a concept—how might we think about collapse in more general terms?

[75] Symposium - BIG ROLES FOR SMALLHOLDERS IN COMPLEX SOCIETIES

Archaeology provides the unique opportunity to investigate historically silenced groups, such as the non-elite members of complex societies. With increasing emphasis on household assemblages in the past several decades, the artifactual remains of smallholders (or "peasants") make up a growing portion of archaeological data from early complex societies. It remains unclear, however, what types of roles smallholders played. Building on a spate of archaeological research into smallholders in the 1970s and 80s that provides the empirical background on how smallholders practice agriculture, the goal of this session is to tie their range of social practices, including participation in market economies, self-sufficiency, and household division of labor, to long-standing research questions related to the formation of complex societies. How did the role of smallholders vary between emergent complex societies in terms of the creation and maintenance of inequality? Did they facilitate, resist, and respond to large-scale social change in a uniform manner that we can use to generate a general theory of smallholders? This session addresses these questions from Old and New World perspectives. In seeking a broader theoretical framework for understanding smallholders, this session aims to generate unifying ideas of interest to anthropologists of both the ancient and modern world.

[76] General Session - CHILEAN ARCHAEOLOGY

[77] General Session - MAYA RITUAL

[78] General Session - HISTORICAL ARCHAEOLOGY IN THE SOUTHWEST

[79] General Session - CROSSROADS: CONNECTIONS AND ARCHAEOLOGY OF ANATOLIA

[80] General Session - EUROPEAN ZOOARCHAEOLOGY

[81] General Session - ARCHAEOOMETRY AND ARTIFACT ANALYSIS IN EUROPEAN ARCHAEOLOGY

[82] General Session - WESTERN US HISTORICAL ARCHAEOLOGY

[83] General Session - SHIPWRECKS AND MARITIME ARCHAEOLOGY

[84] General Session - METHODS IN ZOOARCHAEOLOGY

[85] General Session - MOBILITY, TECHNOLOGY, AND ENVIRONMENT IN PREHISTORIC NORTHEASTERN NORTH AMERICA

[86] General Session - MORTUARY STUDIES IN THE MESOAMERICAN WORLD

[87] General Session · CAUCASUS ARCHAEOLOGY**[88] General Session · ANCIENT MAYA POLITICAL ORGANIZATION****[89] Forum · ACROSS THE ATLANTIC: PROFESSIONALISM IN ARCHAEOLOGY OVER HERE AND OVER THERE**

This session aims to compare regulatory procedures and the role of professional standards and professional accreditation in the U.S.A. and the U.K. Both have a strong tradition of self-regulation across professional disciplines, and both have now well-established professional organizations in the form of the Register of Professional Archaeologists and the Chartered Institute for Archaeologists.

What are the regulatory structures and procurement practices governing the way the historic environment/cultural heritage is investigated archaeologically, when occasioned by development on a commercial or quasi-commercial basis? What is the role of professional standards and professional accreditation/registers, and of the professional bodies that own them? And what would we like that role to be? How can we get there?

By looking at the range of structures and systems across the States and the U.K. administrations of the U.K., can we identify what's good, what's bad, and what we're planning to do to improve the situation? More importantly, how can we learn from each other? It is hoped that this discussion might help RPA and ClfA—both of which seek to recruit members from around the globe, explore how they could cooperate, and ensure that they don't compete unhealthily.

[90] Poster Session · NORTH AMERICA - NORTHEAST**[91] Poster Session · CERAMICS OF THE INDIGENOUS CULTURES IN SOUTH AMERICA: STUDIES OF PRODUCTION AND EXCHANGE USING INAA**

Indigenous peoples of South America produced a diverse assortment of ceramics ranging from the common to the artistic with many types characterized by symbolic, religious imagery. In some areas, pottery was mass produced for the general population as well as the elite. Reliance on compositional data from instrumental neutron activation analysis (INAA) to study production and exchange practices of indigenous ceramics from the continent of South America has grown over the past two decades. In some instances, the data from other analytical methods have been integrated with data from INAA to extend the investigations toward more complex questions. In this poster symposium, several case studies will be presented facilitating comparisons and contrasts between regions.

[92] Poster Session · TEXTILE TECHNOLOGIES OF PREHISPANIC MESOAMERICA AND THE ANDES

The social, political, and economic role of cloth in Mesoamerica and the Andes has been well documented in ethnographic and ethnohistoric literature. While archaeologists working in these regions are aware of the significance cloth had within the communities they study, textile production receives relatively little attention compared to other technologies documented in the archaeological record. Researchers from the Andes are fortunate to have a large sample of prehispanic textiles to work from, whereas textiles in much of Mesoamerica leave little material trace, except for the artifacts used for creating them. Spindle whorls are especially well documented, but other weaving implements are occasionally found in elite funerary contexts.

This session examines these technologies, with an emphasis on the textiles themselves from the Andean region and on spindle whorls and other weaving implements recovered from Mesoamerican contexts. When Andean textiles are studied, they are often examined through an art historical lens, with researchers focusing on patterns in overall structure and design. Our focus lies instead in documenting the technical attributes of textiles and the materials used to create them in order to develop a better understanding of the communities that produced them.

[93] Poster Session · RECENT ADVANCES IN THE ARCHAEOLOGY OF THE THREE RIVERS REGION OF THE CENTRAL MAYA LOWLANDS

The Three Rivers Region of the Central Maya Lowlands includes the northeastern portion of the Department of Peten, Guatemala, and the adjoining northwestern portion of Belize. It is defined as the area within the Rio Azul, Rio Bravo, and Booth's River which converge to form the Rio Hondo. The area includes such well known sites as Rio Azul, Kinal, La Milpa, and Blue Creek. The region has been intensively investigated by a number of researchers since being defined more than two decades ago. This poster session attempts to bring together a cross-section of the most recent work.

[94] Poster Session · ARCHAEOLOGICAL ANALYSIS USING BINFORD'S ENVIRONMENTAL AND ETHNOGRAPHIC FRAMES OF REFERENCE

Binford (2001) constructed environmental and ethnographic data sets specifically for archaeologists to use as tools to leverage learning about the past. While researchers from several other fields ranging from cross-cultural analysis and epidemiology to macroecology have taken advantage of these data, relatively few archaeologists have pursued the kinds of learning strategies Binford imagined. The posters in this session showcase some of the archaeological work that is being done using Binford's frames of reference and related analytical strategies. Examples span a wide range of geographic and temporal scales, explore ecological components of observed adaptations, and test expectations for what hunter-gatherers might be like against archaeological observation.

[95] Symposium - 'CALIBRATING' PALAEOCLIMATOLOGY-INFORMED RESEARCH IN OLD WORLD ARCHAEOLOGY: DATA, METHODS AND THEORIES

After two decades of increasing and often deterministic palaeoclimatology-informed archaeological research, there is a need to scrutinize, calibrate, and improve our approaches to climate change in the past and present. Simple cause-and-effect correlations, often on the basis of coarsely resolved time series, are gradually being supplemented by multi-scalar models of non-linear dynamics, including concepts such as adaptive cycles or critical transitions. Furthermore, mathematical modeling of culture-environment/climate interaction is increasingly applied to single out parameters or to search for alternative explanations. Palaeoclimatic time series have become more precise, as have archaeological chronologies, and with the increase in temporal resolution previous interpretations of climate-culture interconnections on a continental or global scale are beginning to be challenged and to be replaced by more fine grained locally and regionally scaled research projects. This session will present case studies of such multi-scalar palaeoclimatology-informed archaeology from the Old World, and will discuss the data, methods, and theories as well as outline future directions for palaeo-climatic research in archaeology.

[96] Symposium - RECONSTRUCTING RESOURCE AVAILABILITY, USE, AND MANAGEMENT AT NAACHTUN (GUATEMALA), A REGIONAL MAYA CENTER OF THE CLASSIC PERIOD

One of the objectives of the Naachtun Archaeological Project is to conduct a multidisciplinary study of the resources used by the site's ancient Maya inhabitants, as well as the evolution of its economy through time, in order to better understand the social and political history of this city. We propose to discuss two issues related to the availability and management of various resources, focusing on the supply strategies and the technical system associated to their use. How did the Maya of Naachtun manage the soils, water, and forests and positively construct their surrounding landscape to sustain a large population during roughly a millennium of prosperity? Do the variations observed in the availability and management of these resources reflect phases of environmental and/or economic stress? To what extent did human activities and climate changes impact the local environment and what were the consequent adaptive strategies? Combining paleoenvironmental and material culture studies, these questions are broached via a diachronic approach to evidence the temporal variability of human responses to environmental variations. This perspective would highlight the importance of resources management strategies in the socio-cultural cycles and population dynamics we observe within the history of Lowland Maya cities.

[97] Symposium - THE RISE, SPREAD, AND DOMINION OF HUMAN INSTITUTIONS

Populations organize into complex systems to resolve the myriad of problems they come across in their daily life. These include resolving basic subsistence concerns, maintaining a stable decision-making apparatus, defending against foreign aggressors, resolving existential issues associated with their place in the cosmos, etc. New Institutional Economics (North 1991, 2009) proposes that these organizational principles result in a number of social institutions that once formed have the structural autonomy to preserve themselves, perpetuate their agendas, and in some cases, expand aggressively. Under this approach, social scientists increasingly study present-day institutions to clarify the mechanisms by which they develop and evolve. To this aim, archaeology provides us with an unparalleled appreciation for institutional change because it allows us to reconstruct how and why specific institutions developed in different populations with various social conditions and through very long sequences of time. This symposium will take advantage of the comparative potential intrinsic to the study of prehistoric societies to clarify why specific institutions appeared at particular moments in the developmental history of some populations, what functional purpose they served, how they created ethos that cemented their place within the broader social zeitgeist, and why some expanded aggressively within and across populations.

[98] General Session - SOUTHEASTERN ARCHAEOLOGY**[99] Symposium - ANDEAN ONTOLOGIES: NEW PERSPECTIVES FROM ARCHAEOLOGY, ETHNOHISTORY AND BIOARCHAEOLOGY**

The goal of this symposium is to reflect and discuss the ways in which the Andean worldview contributes to the humanities and social sciences. The main objective is to analyze deeply imbedded Andean concepts such as pacha, runa, camaq, huaca, minka, ayni, ayllu, hannan, hurin, etc., through archaeological, ethnohistorical, and bioarchaeological lenses. By doing this, we intend to identify aspects of the indigenous view point, most likely hybrid perceptions, and thus offer emic interpretations of the Andean world. By no means do we hope to reproduce immutable and common definitions of these concepts but rather offer interpretations that complement pre-existing Western perceptions.

[100] Symposium - THE ENVIRONMENTAL LEGACIES OF COLONIALISM IN THE NEOTROPICS

(SPONSORED BY GEOARCHAEOLOGY INTEREST GROUP)

The arrival and settlement of Europeans throughout the Americas led to unprecedented demographic and environmental transformations. The voluntary and forced migration of peoples from Europe, Africa, and Asia, and the simultaneous introduction of new forms of production, along with exotic biota and diseases, contributed to the emergence of novel social, economic, and ecological systems. Through analysis of soils, plants, animals, and other proxies, archaeologists are uniquely situated to investigate the localized manifestations of these processes. Yet, while environmental research on prehistoric sites in the Americas has burgeoned in recent years, the direct archaeological examination of the ecological effects of European colonial expansion is still a developing field. This session responds by considering environmental archaeological research on the period after Europeans began to settle throughout the Western Hemisphere, with an emphasis on understanding how this historical process has differently structured current socio-ecological landscapes in the Neotropics—a biogeographical region sharing many plant and animal groups. We also seek to identify the implications of these changes for contemporary communities and

ecosystems, as the legacies of colonialism continue to shape modern social and environmental challenges.

[101] Symposium · CONNECTIONS AND COMPLEXITY: SHIFTING PERSPECTIVES AND CURRENT RESEARCH IN WESTERN MESOAMERICA

Fifty years ago, Ignacio Bernal famously stated that western Mesoamerica lacked “civilization.” Since the west had not received “Olmec” influence, Bernal reasoned, the region was a uniquely isolated area in which complex societies and “high culture” failed to develop and flourish. Since then, much archaeological research in west Mexico has attempted to demonstrate the fallacy of this reasoning. Ironically, however, many treatments have been based on the same outmoded neo-evolutionary frameworks and static typologies that underpin Bernal’s vision, thereby reinforcing the original perception and losing sight of the richness of the archaeological data itself. In contrast, this symposium highlights current archaeological research in western Mesoamerica to provoke and engage debate surrounding these and other issues. Through the presentation of original data and interpretations, contributions seek to advance understanding of both regional complexity and diversity, as well as the role of the west in broader, pan-Mesoamerican sociocultural processes. The symposium thus illustrates the ways in which research and areal data from western Mesoamerica can meaningfully contribute to the construction of theoretical models applicable in multiple contexts and capable of enhancing archaeological descriptions and explanations of the dynamic diversity characteristic of all Mesoamerican societies.

[102] Symposium · CONTINUITY AND CHANGE IN THE PERUVIAN NORTH HIGHLANDS: CURRENT RESEARCH IN THE CAJAMARCA REGION

The pioneering work of Henri and Paule Reichlen in 1947 highlighted the importance of the Cajamarca region in the Andean cultural landscape, from the Archaic and Formative periods to the Inca occupation. Since then, archaeologists and ethnohistorians have added considerably to our understanding of cultural development in Cajamarca and regional interactions between Cajamarca and neighboring areas. This symposium focuses on recent investigations and ongoing projects in an effort to bring together and flesh out the current state of the archaeology of the Cajamarca region, including both the Cajamarca Tradition and its antecedents. It also seeks to look at Cajamarca archaeology both within the northern highlands and in regions with which Cajamarca was in contact. Recent investigations and themes may include, but are not limited to, the development of new models of social organization and development in the northern highlands, issues of ethnicity and social identity, local and interregional interaction, cuisine and class, mortuary patterns, artistic expression and identity, and production and consumption within and between Cajamarca communities.

[103] General Session · EUROPEAN BIOARCHAEOLOGY

[104] Symposium · WHAT WAS “FREMONT”? ADVANCES IN THE EXPLANATION AND ARCHAEOLOGICAL UNDERSTANDING OF THE FREMONT REGIONAL SYSTEM

In the far northern southwest, many advances within Fremont archaeology have recently occurred. Focusing on Fremont as interconnected groups of people who were influenced by agriculture and may have shared ideas concerning how artifacts, structures, and their social world should be, this symposium presents a series of papers in which authors tackle both large scale and site specific problems to discuss what being “Fremont” meant and how this identity influenced the behavior of those who participated in the Fremont Regional System. These papers address questions concerning pan-Fremont traits and the origins of Fremont social life along with questions of community organization and activities, how both farming and foraging fit into Fremont life, the positioning of high status individuals within the Fremont social world, and how Fremont people situated themselves in relation to the larger southwestern interaction sphere.

[105] Symposium · POWERFUL PLACES IN THE ANCIENT ANDES

In the contemporary Andes, the world is animated by a circulating life force, sometimes called *sami*, which connects all living things. This force courses through rocks, springs, plants, animals, ancestors—such that the boundary between “living”/“dead,” “natural”/“cultural,” and “past”/“present” are, at best, fuzzy and malleable. The distribution of *sami*, however, is not equal. The life force can pool in certain places and drain out of others. The idea of an animate, interconnected world was documented for the Inca, and archaeological research suggests that this belief has deep roots in the Andes. Power among the ancient societies of the region was thus conceived in part through varied ritual strategies of mimesis, alterity, and communion that created, channeled, and redistributed vital forces, a process that effectively merged, or at times separated, social, ontological, and cosmic realms. The desire, in many cases, was to create a place charged with power. This session brings together a group of well-established and up-and-coming scholars to investigate how power-filled places were constructed, maintained, and occasionally destroyed in the Ancient Andes from 3000 B.C. to the end of the early Spanish colonial era in the eighteenth century A.D.

[106] Symposium · GUAVA CAT ARCHAEOLOGY: PAPERS IN MEMORY OF PROF. POCHAN CHEN

This symposium brings together students, classmates, collaborators, and teachers of Prof. Pochan Chen, of National Taiwan University, who died unexpectedly at the age of 41 in June of 2015. Prof. Chen worked extensively on issues related to culture contact and trade, primarily in China. His work spanned research on salt production and exchange, the construction of social identity in burial contexts, and regional processes related to economic activity and the formation of identity, including World Systems Theory, Trade Diasporas, Ethnogenesis, and Gender. In addition, he stimulated an entire generation of scholars in Taiwan interested in historical archaeology in contexts beyond mainland China, including Taiwan, the Philippines, and elsewhere.

[107] Symposium · ARCHAEOLOGY OF THE NIGHT

As twilight settled in the ancient world, a host of activities ensued, some of which were significantly different from what people did during the daytime. Some artifacts, features, and buildings associated with these activities were particular to the dark, while other material culture was transformed in meaning as the sun set. Night offers refuge from the heat and demands of the day but can also bring with it nightmares, night raids, and other dark doings. Sleep, sex, socializing, stargazing, storytelling, ceremony, work, play—so much of our economic, social, and ritual lives take place at night—yet relatively little archaeological research focuses specifically on nightly quotidian practices. This symposium examines the archaeology, mythology, iconography, and epigraphy of nocturnal doings, and in the process will challenge our familiar reconstructions of ancient life. Topics include the liminal periods of dusk and dawn, the cultural diversity of sleep patterns, the practical and psychological effects of artificial light, and the origins of the ‘nightshift.’ Contributors explore the concept of the nighttime within a comparative anthropological framework in order to provide the broadest possible interpretation of individual case studies drawn from a wide range of ancient and prehistoric cultures from diverse areas of the globe.

[108] Electronic Symposium · DYNAMIC WORLDS, SHIFTING PARADIGMS: RELATIONAL ONTOLOGIES IN ARCHAEOLOGY

Relational ontology, as a theoretical movement, is characterized by differing perspectives, applications, and interpretations of archaeological materials, places, and persons as they constitute multiple social worlds. A current reading of theoretical archaeological literature reveals diverse relational perspectives applied to varying contexts and materials. This moving definition may seem difficult to nail down, and we ask: are differing definitions of relationality problematic, or is the concept—like social relationships themselves—contextually and culturally contingent? In this session, we interrogate and discuss the multiple natures of relational ontologies as ever-changing, fluid, and diverse ways of understanding how people, past and present, relate to the world with which they engage. The bulk of the session will focus on discourse rather than presentation. This session examines shifting understandings of relational theory through case studies from North and South America. We will explore cultural relativism, physical and conceptual boundaries of social relationships, humanity and personhood for other-than-human persons, and finally Indigenous thought and theory. As archaeologists who predominately study non-western and pre-industrial peoples, we ask participants to reconsider our role in creating historical narratives, because what is archaeology if not a rigorous means to re-tell the past.

[109] Forum · EXPLORING THE UNNAMED ERA: PRE-MAMOM POTTERY IN THE MAYA LOWLANDS OF YUCATAN, PETEN AND BELIZE

Pottery production and the dissemination of pots and potters' ideas have been the basis for chronological comparison in the lowland Maya region since Edith Ricketson first seriated the Uaxactun pottery in the 1930s. R.E. Smith named the phases and published the Uaxactun ceramics monograph in 1955, providing a baseline for general ceramic sphere correlation. Today, we are so dependent on the Uaxactun ceramic sphere names that we still refer to early Middle Preclassic pottery as “Pre-Mamom” because these materials antedate the earliest ceramics described from Uaxactun, termed Mamom Phase. Although our process has relied on precedent thus far, the Uaxactun preclassic sequence does little to help us describe the diverse ceramic landscape of the first pottery producers in Yucatan, Peten, and Belize.

This forum is designed to provide visual comparison of these small dispersed early Middle preclassic data sets, annotated by panel discussion on the characteristics of materials so far excavated. Participants will provide a range of images and possibly type collections for the group to discuss and compare. Besides considering each region topically, panel members will discuss the larger question of how accurately the Pre-Mamom to Mamom transition can be depicted using the current paradigm.

[110] Poster Session · ARCHAEOLOGY OF CALIFORNIA**[111] Poster Session · ARCHAEOLOGY OF THE MIDWEST II****[112] Poster Session · NORTH AMERICA - MIDWEST****[113] Poster Session · GREAT BASIN, BASIN PLATEAU****[114] Poster Session · NORTH AMERICA - GREAT BASIN****[115] Poster Session · NORTH AMERICA - PLAINS****[116] Symposium · BURIED, BURNED, BUNDLED AND BROKEN: APPROACHES TO CO-OCCURRENCE OF MULTIPLE METHODS, TREATMENTS AND STYLES OF BURIALS WITHIN PAST SOCIETIES**

Bioarchaeology and mortuary archaeology have historically relied on complete inhumations as the source of data based on human remains. However, not all cemeteries have only inhumed burials—cremation, secondary burial, and other methods can co-occur at these sites. Despite this, the cremated or commingled remains have often deteriorated in museums, been relegated to appendices, or ignored due to their interpretive difficulty. Over the past two decades, the value of cremated, commingled, and fragmentary remains has been recognized, and recent publications have shown that cremated, disarticulated, and commingled remains can provide important information on past people and their behavior that isn't always apparent with complete inhumations. These conversations often address a specific type of body treatment, and there is little discussion occurring

between them. Increased conversation is needed about the presence of multiple burial treatments within single sites, and how different forms of body treatment compare. While each treatment is unique and requires specific contextual analysis, when multiple forms of body treatment co-occur at the same site, complete discussion is required. This session brings together archaeologists studying co-occurrence of multiple forms of burial in order to generate discussion, and promote the study of alternative types of treatments alongside complete inhumations.

[117] Symposium · HUMAN SACRIFICE IN ANCIENT MESOAMERICA: NEW EVIDENCES AND THEORETICAL PERSPECTIVES

The topic of sacrifice and human sacrifice in ancient Mesoamerica needs to be revisited in light of new evidence, theoretical models, and interdisciplinary and comparative approaches. The central question that scholars attempt to grapple with when it comes to bloodletting rituals, sacrifice of animals, or humans, is why? Why do humans collectively hurt themselves and/or kill innocent animals and other human beings? Past theoretical approaches have immortalized and universalized cosmological principles and applied these uniformly to multifarious cultures in diverse time periods and in different regions of Mesoamerica. These outdated models have neglected unique interpretations, independent articulation, and sometimes wholesale reworking of inherited or imported sacrificial ideologies. These same models do not track permutations in ritual practices and concomitant artistic representations of these practices. This symposium addresses ritual sacrifices from new perspectives that include economic, political, and military motivations as well as agricultural, calendrical, and astronomical influences. A consideration of sacrificial ritual practices at all levels of social stratum (shamanism on elite and commoner levels) offers a more holistic perspective. This symposium will be interdisciplinary and will include site-specific, as well as comparative, approaches and will be based on new iconographic, epigraphic, and archaeological evidences.

[118] General Session · ARCHAEOLOGY OF THE NORTHERN PERUVIAN COAST

[119] Symposium · ARCHITECTURAL ENERGETICS

Since Elliot Abrams' seminal 1994 book "How the Maya Built their World: Energetics and Ancient Architecture," many archaeological scholars have explored architectural energetics as a methodology and lens through which to understand cultural change, political economy, construction processes, and architectural features. The scholars presenting in this session apply architectural energetics in diverse regions and support many contextual arguments that highlight both the diversity of the ancient past and commonalities of construction. In light of these distinct contextual applications, we explore energetics investigations 20 years on from Abrams' important synthesis. Further, we explore what insights these diverse studies offer for our understanding of how and why people engaged in constructing large architectural features through time and space.

[120] Symposium · STUDENT CONTRIBUTIONS IN GEOARCHAEOLOGY

(SPONSORED BY GEOARCHAEOLOGY INTEREST GROUP)

One predictor of a discipline's directions is student research. This organized session showcases papers led by current graduate and undergraduate students pursuing geoarchaeological research. Other than these two common threads, contributions span time and space, are single- and co-authored, and utilize a variety of methods to understand aspects of the landscape context of the archaeological record. The session's goal is to offer student authors a forum to disseminate their recent work to a broad audience of peers and professionals.

[121] General Session · ADVANCES IN ARCHAEOLOGICAL METHODS

[122] Symposium · FOOD AND CULTURE IN THE ANDES

Food is one of the most integral aspects of human existence. It is, on the one hand, a biological imperative fueled by nutritional need—we must, after all, eat to live. The food that we eat, however, is made up of much more than calories. It can have a "two-fold value": nutrition and signification (Barthes 1979: 25). While there has been a heavy emphasis on subsistence in archaeology, the social aspects of food have been largely ignored. The Andes, in particular, is an ideal area to investigate the social dimensions of food with a strong tradition of foundational research in agricultural production, environment, and objects associated with the consumption of food. The growing use of various methodological approaches (e.g., archaeobotanical, zooarchaeological, and bioarchaeological) has resulted in a more holistic and intimate picture of the constant articulation and negotiation of social relations through food.

[123] General Session · PLAINS AND BASIN ARCHAEOLOGY

[124] General Session · COOL ARCHAEOLOGY: ALASKA, BRITISH COLUMBIA AND THE NORTHWEST COAST

[125] Symposium · ANTHROPIC ACTIVITY MARKERS: ARCHAEOLOGY AND ETHNOARCHAEOLOGY

People tend to recurrently use specific areas of their living space, producing an accumulation of evidences (chemical and/or physical) that represent the result of the activity performed. The possibility to identify and connect these evidences to the activity that generated the record is pivotal to our understanding of past human behaviour. Ethnoarchaeology and experimental archaeology drive the inferential reasoning that creates the models connecting the distribution/concentration of proxies with specific activities. We define these models as 'anthropic activity markers' and propose a transdisciplinary approach to reduce

problems of equifinality whereby the same pattern might be caused by several activities. In particular, the analysis of the spatial distribution of the fingerprints under study is considered fundamental for the definition of anthropic activity markers. This session aims to gather contributions from scholars in different fields, willing to challenge this issue from different points of view and at different scales (landscape and domestic or productive structures), going from a macro to a micro scale, from "space," to "place." We invite contributions that include different approaches, such as remote sensing, archaeological prospection, botanic analyses, chemical analyses, archaeozoology, microdebitage, and micromorphology. Archaeological and ethnoarchaeological contexts will be welcome to show the potentiality of the approach.

[126] Symposium · BUILT ENVIRONMENTS OF ENSLAVED EXPERIENCE IN THE CARIBBEAN

This symposium examines the varied living environments of the enslaved in the colonial Caribbean. Archaeological investigations of domestic architecture and artifacts illuminate the nature of household organization, fundamental changes in settlement patterns, and the manner in which power was invariably linked with the material arrangements of space among the enslaved at a variety of sites throughout the region, including plantations, fortifications, and urban contexts. While research in the region has provided a considerable amount of data at the household-level, much of this work is biased towards artifact analysis, resulting in unfamiliarity with the considerations that went into constructing and inhabiting households. Papers within this symposium will provide detailed reconstruction of the living environments of the enslaved and will take into account the cultural behaviors and social arrangements that shaped these spaces. It brings together case studies of Caribbean slave settlements as a means of exposing the diversity of people and practices in these settings.

[127] Symposium · THE BOLONCHÉN REGIONAL ARCHAEOLOGICAL PROJECT: SIXTEEN YEARS OF INVESTIGATING MAYA SOCIETY IN THE EASTERN PUUC REGION FROM THE PRECLASSIC THROUGH THE HISTORICAL PERIOD

The Puuc Region of the Northern Yucatán Peninsula has long been identified as a distinctive cultural sub-region of the greater Ancient Maya area along architectural, environmental, and demographic lines. Since 2000, the Bolonchén Regional Archaeological Project (BRAP) has investigated the formation of regionalism and the Ancient Maya community in the eastern Puuc centering on the sites of Kiuic, Huntichmul, Labná, and Yaxhom. Taking a holistic approach that includes extensive inter-site survey work, systematic excavations, archaeometric analyses, and experimental archaeology, BRAP is continuing to shed light on the unique local trajectory of the Bolonchén District. Sub-foci of the project include such wide-ranging topics as: the evolution of public architecture and spaces; the settlement and exploitation of the hinterlands between the larger site centers; the development and organization of an elite suburban complex; the identification of some of the earliest permanent settlements in the region; Ancient Maya foodways; site abandonment processes; and, the continued occupation of the region in recent centuries, among others. As a result of these ongoing studies, BRAP is contributing to a more detailed understanding of the development and functioning of Maya society in the region from the Middle preclassic, all the way up through the Historical Period.

[128] Symposium · WHY SOCIAL ARCHAEOLOGY MATTERS

We currently find ourselves on the cusp of significant change, as tensions related to race, ethnicity, religion, and gender are currently at the forefront of today's social struggles. Archaeology, specifically social archaeology, has the opportunity to inform and enrich current social movements. The goal of this session is to emphasize the contributions of archaeologists to understanding the social processes of the present. AAA president Leith Mullings (2015) recently outlined her vision of "why anthropology matters" by emphasizing anthropology's relationship to recent social movements—we argue that archaeology has an important role to play in this conversation. Human agency is widely regarded as an important generative force of cultural change and archaeological research on gender, identity, class, power, religion, and ethnicity has exploded in the past two decades. In an effort to make archaeology relevant to the broader public, archaeologists have successfully emphasized the ecological implications for the study of archaeology, however, we have largely ignored the profound insights that archaeology can provide into understanding the role of human agency and social forces in generating wide-scale change. As a consequence, we may be missing opportunities to make archaeology relevant to events that are currently playing out in the modern world.

[129] Symposium · THE RISE AND DECLINE OF TEOTIHUACAN: URBANISM, DAILY LIFE, AND REGIONAL RELATIONS THROUGH TIME

This session assembles current research on urbanism and daily life in the city of Teotihuacan and neighboring communities in the Basin of Mexico during the Classic and Epiclassic periods (ca. 1–800 C.E.). The evolution of Teotihuacan society through time is emphasized, including transformations in the urban landscape, the lives of commoners, and the relations of the capital city to surrounding settlements and resources. Papers include the results of new research on the Tlajinga district, a lower status group of neighborhoods in the south of the city, which illustrates the attractions and detractions of urban life for commoners and the processes by which the city grew southward. The creation of the first LiDAR map of the city; results of an initial season at the Plaza of the Columns; and new investigations at the Moon Plaza, are also presented. Outside of the city, papers examine exploitation of the Sierra de Las Navajas obsidian mine and the growth of Epiclassic communities such as Chicoloapan, in the southern Basin, amidst the demographic decline of the city, and the erosion of its central political institutions.

[130] Symposium · "CHANGES IN LATITUDES, CHANGES IN ATTITUDES": TRANSITIONS AND THRESHOLDS THROUGHOUT CENTRAL AMERICA AND BEYOND

The archaeological record presents both opportunities and challenges to archaeologists studying societal and environmental change in Mesoamerica and globally. This session explores multidisciplinary techniques to better understand the complexities of societal transitions in the ancient Maya world and beyond. Environmental and societal transitions are a complex but vital aspect of archaeology. Shifts in environmental patterns, social behaviors, and changes in land use provide multiple datasets for analyzing resource extraction and human resilience. We consider case studies on diachronic change from archaeological investigations throughout Mesoamerica and neighboring regions. Patterns of change can include the shift from hunting and gathering to long term sedentism, the regional climate and soils, historical changes in trade, and shifts in political and economic power. This session will examine how we can search for and detect connections between environmental and societal changes throughout the

archaeological record.

[131] Symposium · ROCK ART: METHODOLOGY AND INTERPRETATION IN THE ARCHAEOLOGY OF THE SITE

(SPONSORED BY ROCK ART INTEREST GROUP)

The cultural manifestation we label rock art has the potential of being identified and recorded from wherever humanity has traveled. In the pursuit of innovative instrumental technique, enhanced interpretive insight, and successful approaches to preservation, this Rock Art Interest Group sponsored symposium is intended to provide a context within which recent archaeologically informed rock art research can be shared.

[132] Symposium · TERRAFORMING AND MONUMENTALITY IN HUNTER-GATHERER-FISHER LANDSCAPES

Monumental constructions, whether economic, political, or symbolic in their origin and use, are integral to how hunter-gatherer-fisher (HGF) peoples have constructed and shaped their worlds over much of the Holocene. For this symposium, we bring together studies from various areas of the globe to theorize about these practices, and to account for the complex and varied ways in which large-scale features were constructed and terraforming was practiced in HGF societies. While monumentality has been well-studied in early agricultural and later contexts, the record of HGF monuments is clearly extensive, and attests to a more complex engagement with material production, the construction of place, of identity, and of history than is recognized in the broader discipline. We seek to provide a set of theoretical and methodological tools to address this record.

[133] Symposium · RECENT CONSIDERATIONS OF COASTAL SUBSISTENCE PRACTICES IN THE SOUTHEASTERN USA

The American southeast boasts thousands of miles of crenulated shoreline that has been home to coastal dwellers for millennia. As such, the rich traditions of maritime adaptations and lifeways have been the focus of archaeological research in the southeast for decades. Specifically, subsistence research in the region has revealed the antiquity and diversity of southeastern coastal subsistence strategies and contributed to global understandings of resource seasonality, habitat use, and human mobility and settlement. This symposium builds on these foundations by focusing on the recursive relationships inherent to human-environment practices, including resource procurement, subsistence strategies, and sociocultural interactions.

The diversification of method and theory in the past few decades has inspired researchers to engage a broad range of topics of anthropological interest. Issues of labor, technology, knowledge, tradition, place, identity, gender, religion, and ritual are being addressed with subsistence data. The papers in this symposium focus on these research themes in a turn from strictly ecological interpretations of subsistence data. This session aims to highlight the diversity and complexity of southeastern subsistence practices in order to encourage discussion both across and outside the region.

[134] Symposium · APPLICATIONS OF ISOTOPE RESEARCH IN ZOOARCHAEOLOGY

Recent advances in stable isotopic analysis have enabled zooarchaeologists to explore previously unanswerable questions regarding past human and animal relationships. Stable isotope investigations using ancient bone and shell remains have the potential to assess a number of diverse social and biological topics, including diet and foodway practices, status and differential provisioning, exchange patterns, animal rearing and hunting techniques, biological consequences of domestication, and short and long term environmental changes. This session examines several applications of animal isotopic analysis from across the globe and from both prehistoric and historic eras.

[135] Symposium · E PUR SI MUOVE: EXPLORING MOBILITIES IN LATIN AMERICA

Throughout history, Latin America has been the scene of a remarkable mobility of people, animals, things, ideas, languages, and even entire communities. Mobility, however, is an elusive research topic that is “as much about meaning as it is about mappable and calculable movement” (Cresswell 2011:551). Mobilities shape physical and cultural landscapes, and at the same time they are bound up with the production and negotiation of power relationships. As such, when attempting to reconstruct the dynamics of movement in the past, not one single discipline can fully untangle the complex interplay between motion, situation, context, and meaning. This session will therefore explore archaeological approaches that integrate historical, ethnographic, biological, geographical, linguistic, and other methodologies to reconstruct the social and economic dimensions of mobility politics in Latin America.

[136] Symposium · PLURALIDAD EN LOS ESTUDIOS MESOAMERICANOS: REGIONES Y PERSPECTIVAS TEÓRICO METODOLÓGICAS

Desde que Paul Kirchhoff propuso el término de Mesoamérica, éste ha sido usado por múltiples investigadores como herramienta conceptual para amalgamar y entender las similitudes en las evidencias arqueológicas halladas en una vasta extensión geográfica que abarca gran parte del territorio mexicano y algunos países en Centroamérica. El reconocimiento de las similitudes lleva por ende la aceptación de diferencias que han permitido definir regiones culturales con características propias y que nos ayudan a comprender el dinamismo con el que las antiguas sociedades se desarrollaron a lo largo del tiempo y el espacio. Ese ejercicio se ha dado gracias a la creación de espacios de discusión y difusión de los nuevos hallazgos arqueológicos realizados por distintos grupos de investigadores cuyo interés es coadyuvar al entendimiento de las antiguas sociedades mesoamericanas y su complejidad. Bajo esa perspectiva es que se propone en este simposio fomentar ese espacio de discusión entre las distintas investigaciones realizadas en diferentes regiones culturales de Mesoamérica y efectuadas por jóvenes investigadores para que se puedan dar a conocer los resultados obtenidos y, al ser expuestas las posturas teóricas-metodológicas de trabajo, reforzar o conocer nuevas propuestas de aproximación a los estudios mesoamericanos.

[137] Symposium · RECONSIDERING MISSISSIPPIAN HOUSEHOLDS AND COMMUNITIES

This year marks the twentieth anniversary of *Mississippian Communities and Households* (Rogers and Smith 1995). The landmark volume can be credited with making "household" a popularly employed concept in Mississippian archaeology. Indeed, the ubiquity of the household is matched by the diverse ways that this concept has been employed. However, contributors in the volume did not explicitly address communities and instead operationalized them as archaeological sites and settlements composed of aggregations of houses, pits, and people. In the two decades since the volume's publication, researchers have approached communities and households from many different methodological and theoretical directions. In this symposium, we challenge participants from the various temporal and geographic subdivisions of the Mississippian southeast and midwest to engage with Mississippian communities and households as situated within entangled networks of peoples, places, practices, and things. This can include linking "classic" household archaeology approaches to broader theoretical issues, as well as moving beyond traditional spatial and coresidential definitions of community. Further, we encourage contributors to consider the social construction of Mississippian communities and households via the varied and often complex processes of multiscale group identity formation and maintenance.

[138] Symposium · THE CONTRIBUTIONS OF VERNON SCARBOROUGH IN WATER MANAGEMENT AND SUSTAINABILITY, PART 1: GLOBAL AND COMPARATIVE

Working in the Maya area and on water and sustainability issues during the last several decades almost certainly includes reading the works of Vernon Scarborough. We are fortunate to gather in this session and comment on Scarborough's body of research. His work on anything having to do with water management and sustainability has set the stage for some of the most innovative research on these topics. Vern has taken these skill sets to another level, one that is having global implications because of his initiative and ability to accomplish what anthropologists ideally are meant to do—apply our knowledge to global concerns. Vern accomplishes this feat with aplomb via various international and national organizations, including IHOPE Maya, UNESCO, and others. He has been able to reach scholars from other fields, as well as governmental bodies. This relationship is critical as we address living in an increasingly complex world where climate instability continues to increase and people are beginning to look to anthropologists to cull lessons from the past on addressing not only sustainability but climate change. In this session, contributors focus on Vern's contributions to global aspects of water management and sustainability and how they have impacted their own research.

[139] Symposium · MOBILITY AND USE OF SPACE IN LATE PLEISTOCENE SOUTH AMERICA: IS IT POSSIBLE TO DISCUSS EARLY HUMAN REGIONAL RANKING?

Over the past decades, significant advances have been achieved in the study of the initial peopling of South America. New sites have been discovered at both known and novel study areas and chronological data has been systematically gathered. However, once we recognize the distribution of sites throughout a landscape, the artifact assemblages, and the remains of the subsistence, we must start to inquire what those contexts mean in a regional framework. What does resource selectivity tell us about the economical preferences of the first settlers? When did the earliest patterned movements start? Is it possible to discuss spatial redundancy as opposed to places devoid of human presence? In sum, is it possible to discuss the organization of use of space and mobility for the initial stages of exploration of South American landscapes? The aim of this symposium is to bring together researchers working in different regions of South America to discuss use of space for the initial peopling of the continent. Among the main issues to be discussed are settlement models, site or region redundancy and/or avoidance, dispersal routes, procurement of raw materials as pointers of spatial organization, resource choices as indicative of environmental selection, spatial demarcation, and symbolic aspects.

[140] General Session · TECHNOLOGICAL ADVANCES IN ARCHAEOLOGY**[141] Symposium · CARIBBEAN ARCHAEOLOGICAL COLLECTIONS: HISTORY, MUSEUMS, AND POLITICS**

This symposium aims to bring together scholars working on the histories and movements of Caribbean archaeological objects and collections currently housed in museums. We are interested in tracing the multiple trajectories as well as the changing meanings and values ascribed to archaeological objects when 'found' outside the context of excavations.

What can contemporary Caribbean archaeology learn from historical and recent museum collections? How can objects without proper documentation or context contribute to our understanding of the history of the discipline? How are they socially and politically relevant today? How do recent technological innovations change the ways we look at and into objects? What is the future of archaeological collections from the Caribbean from a legal standpoint?

The papers in this panel look chiefly but not exclusively at collections that are presently located in museums outside the Caribbean—mainly in Europe and the United States. Finally, the symposium aims to discuss the legal issues and the possibilities regarding the ownership and display of Caribbean archaeological objects within the framework of the claims for repatriation and reparations.

[142] Symposium · BRITISH COLONIAL LANDSCAPES OF THE OUTER CARIBBEAN

Shifting political fortunes in the Americas repeatedly forced the British Crown to implement strategies for managing its subject populations. These strategies pushed colonization to ever widening peripheries, transforming natural and cultural landscapes in novel ways. New settlements were established for the purposes of extracting resources, commanding trade, and expanding military authority. These ventures involved the negotiation of power relations between and among colonizers, indigenous societies, and enslaved Africans. Recent archaeological studies examine plantations, outposts, and other built environments of the eighteenth and nineteenth centuries that were peripheral, both geographically and economically, to the more profitable sugar colonies of the Greater and Lesser Antilles. These studies highlight the importance of the material record to understanding social dynamics and globalizing processes within the wider sphere of the Caribbean under British control.

[143] General Session · EURASIA - WEST ASIA

[144] General Session · ARCHAEOLOGY OF IROQUOIA

[145] Poster Session · ARCHAEOLOGY OF EUROPE

[146] Poster Session · ARCHAEOLOGY OF EUROPE II

[147] Poster Session · ARCHAEOLOGY OF EUROPE III

[148] Poster Session · CANADA, ALASKA

[149] Poster Session · STUDYING THE PAST WITH FRAGMENTS FROM THE FIRE: STUDENT RESEARCH ON AN NSF-REU FIELD SCHOOL

Significant population increases, the intensification of craft production, and new forms of agricultural output characterize the eighteenth and seventeenth century B.C. on the Great Hungarian Plain. Many archaeologists consider these changes hallmarks of an emerging social class. Yet research from different parts of eastern Europe suggests that societies were organized in a variety of ways during this regional florescence. This session describes ongoing investigations by the Bronze Age Körös Off-Tell Archaeology (BAKOTA) project into a Middle Bronze Age community buried at the cemetery of Békés Jégvermi-kert (Békés 103) in eastern Hungary. For the first time, research at this site includes an international team of undergraduate students funded by the National Science Foundation Research Experience for Undergraduates Program and the Central European Institute at Quinnipiac University. During the 2015 summer field season, a team of 15 students conducted independent research projects on a range of datasets from the cemetery and surrounding area. In this session, the students present their findings on the site, reporting on how the cemetery population fit into the trade, population movement, and new identities emerging in Bronze Age Europe.

[150] General Session · CENTRAL ASIAN ARCHAEOLOGY

[151] General Session · ARCHAEOLOGY OF THE SOUTHERN PERUVIAN COAST

[152] General Session · ARCHAEOLOGY OF THE ISLES: BRITIAN AND IRELAND

[153] General Session · MID-ATLANTIC ARCHAEOLOGY

[154] Symposium · CERÁMICAS CEREMONIALES DE MESOAMÉRICA: FENÓMENOS DE CORTA DURACIÓN

Una de las características de la historia precolombina de Mesoamérica es que, en momentos críticos de la civilización asociados con los cambios en la organización social, aparecieron cerámicas que plasmaron en sus particularidades las transformaciones culturales de las clases políticas del México antiguo. Sin importar su ubicación geográfica o su dimensión temporal muestran elementos en común, principalmente el hecho de ser manifestaciones inequívocas de fuertes cambios políticos y culturales. Dichas peculiaridades las han hecho fenómenos llamativos, pero a veces poco comprendidos. Así, para tener un acercamiento reflexivo y crítico hacia estas cerámicas, se organiza este simposio, que busca analizar el contexto social e histórico que tuvieron. Se pretende examinar varios de estos casos, respetando su dimensión temporal e incidencia regional, con una perspectiva comparativa y diacrónica que permita explicar el papel que tuvieron en la relación de las élites, entre sí y con los pueblos que las sostuvieron. Al mismo tiempo, explicar también los procesos culturales que promovieron su rápido desarrollo y caída. En ese sentido, el estudio compartido de los distintos tipos cerámicos, de sus formas, de sus vinculaciones culturales y particular iconografía, permitirá alcanzar un mejor conocimiento de estos complejos fenómenos alfareros de corta duración.

[155] General Session · PLEISTOCENE-HOLOCENE TRANSITION ARCHAEOLOGY IN THE AMERICAN WEST

[156] General Session · ARCHAIC AND CERAMIC AGE CARIBBEAN ARCHAEOLOGY

[157] Electronic Symposium · HUMAN-ENVIRONMENTAL DYNAMICS ON THE ATLANTIC COAST OF NORTH AMERICA

The shorelines and estuaries of North America's Atlantic coast have undergone significant environmental and cultural changes since the Last Glacial Maximum, including the inundation of thousands of square kilometers of land, major shifts in plant and animal distributions, the arrival of humans, and the proliferation and diversification of indigenous peoples. Subsequently, the

arrival of Europeans and widespread urbanization and industrialization have caused significant environmental changes, as well. With millions of people living along the Atlantic coast today, and many coastal ecosystems in states of crisis, archaeology provides a perspective spanning millennia of interactions between climate change, coastal ecosystems, and human societies. This symposium brings together scholars focused on the prehistoric Atlantic Coast and the Native American peoples who called it home for thousands of years. Ranging from the Canadian Maritime Provinces to the Florida Keys, the papers in this electronic symposium will focus on a range of issues significant to coastal archaeologists, including: sea level fluctuations and landscape change, the interaction between human culture/society and environment, the relevance of coastal archaeology to modern ecological issues, and future directions. These synthetic papers for each region will serve as a platform for discussion in the session at the meeting.

[158] Forum · PRESENTING THE ANCIENT MAYA IN 3D

The increased use of 3D technology provides opportunities to record, study, and communicate data about Maya sites, artifacts, as well as landscapes in new and sometimes uncharted ways. In this forum, participants will make brief 5-minute presentations, with an open discussion following. The participants bring expertise in various kinds of 3D technology including airborne and stationary LiDAR; surface imaging of artifacts, skeletal material, and monuments using photogrammetry or laser scanning; 3D printing, and manipulation of 3D data. Some researchers collaborate on data acquisition, whereas others do the 3D data collection. Data are used for research, education, archiving, as well as communicating to the public on various platforms. Topics also include ethical issues of data access, issues of data storage, and issues of communicating and publishing big data sets. The forum provides an occasion to discuss the current use and future directions of 3D technology in Maya archaeology.

[159] General Session · EARLY HUMAN ACTIVITIES IN THE SOUTHEASTERN US

[160] Symposium · PRIMER OF THE ANCIENT MARINER: NEW PERSPECTIVES ON ADNA RESEARCH AND THE PREHISTORIC COLONIZATION OF ISLANDS

The extraction and amplification of ancient DNA (aDNA) is a relatively new technique that is being increasingly utilized in archaeological research. Not only can aDNA provide a wealth of important information related to the presence and dispersal of ancient humans, animals, and plants, but also disease transmission, domestication of various biota, and long-term ecological relationships on multiple geographic scales. Islands are a particularly interesting setting for aDNA research as their colonization required a number of cultural, technological, and biological developments involving seafaring, exchange systems, and adaptations to new environments. Additionally, the development and use of commensal models using faunal aDNA as a proxy for human movement has proven especially useful in island contexts for exploring questions related to initial colonization and population movements. This session will explore the myriad ways in which human, animal, and plant aDNA is being used to explore such topics in island regions across the globe, as well as how newer sequencing technologies are expanding the range of research questions that geneticists, archaeologists, and other scientists can use to examine the origins and dispersal of modern humans in the ancient past.

[161] Symposium · NORTH AND SOUTH: NEW DIRECTIONS IN MEDIEVAL EUROPEAN ARCHAEOLOGY

This session provides a forum for promoting advances in medieval archaeology, particularly relating to inter-disciplinary and inter-regional approaches, new theoretical frameworks, methodologies, and research agendas. The session is split between southern and northern Europe (in the broadest geographic sense, including frontiers, seascapes, and neighbouring regions), recognizing the artificiality of sub-divisions within the timeframe of the "Middle Ages," whilst acknowledging modern geographic research parities. Recent developments within the field have contributed to a step-change in the discipline. These have included multiple applications of scientific techniques, sophisticated theoretical paradigms, and inter-regional research frameworks moving beyond particularism, whilst recognizing the importance of local context. This has been partly driven by increasingly international research networks facilitating more supra-regional communication, moving beyond out-dated nationalistic modes of thought. Alternative material histories have prompted the reconsideration of traditional narratives embodied in the perception of the European medieval past. This has brought northern and southern European scholars, as well as those archaeologists working internationally, towards a common nexus, although significant barriers still remain to be overcome. The aim of the session is to contribute to this process on the highest international level, capturing these new directions and promoting them with participants from both Europe and North America.

[162] Symposium · THE CONTRIBUTIONS OF VERNON SCARBOROUGH IN WATER MANAGEMENT AND SUSTAINABILITY, PART 2: THE CLASSIC MAYA

Working in Maya during the last three decades almost certainly includes reading the works of Dr. Vernon Scarborough. We are fortunate to gather in this session and comment on Scarborough's body of research. His work on anything having to do with water management and sustainability has set the stage for some of the most innovative research on these topics. Vern has taken these skill sets to another level, one that is having global implications because of his initiative and ability to accomplish what anthropologists ideally are meant to do—apply our knowledge to global concerns. Vern accomplishes this feat with aplomb via various international and national organizations, including IHOPE Maya, UNESCO, and others. He has been able to reach scholars from other fields, as well as governmental bodies. This relationship is critical as we address living in an increasingly complex world where climate instability continues to increase and people are beginning to look to anthropologists to cull lessons from the past on addressing not only sustainability but climate change. In this session, contributors focus on Vern's contributions to water management and sustainability in the Maya area and how they have impacted their own research.

[163] Symposium · CERÁMICA SIN FRONTERAS: DEFINING CULTURAL PHENOMENA AT THE INTERSECTION OF HONDURAS, EL SALVADOR, AND NICARAGUA

This session brings together archaeologists from three Central American nations, the United States, and Canada to present new data and review the evidence for regional and interregional interaction in the southeast Mesoamerican periphery and northern

Central America. Themes include defining a new ceramic sphere or a cultural sub-region in the southern Mesoamerican periphery, possibly around the Gulf of Chorotega (Fonseca); interregional interactions as seen in ceramics and other artifact classes; ethnic groups, migration, and boundaries in this cultural mosaic.

[164] General Session • FLORIDA ARCHAEOLOGY

[165] Symposium • CELEBRATING NHPA 50TH THE US FOREST SERVICE WAY - IT'S ALL ABOUT PARTNERSHIPS!

(SPONSORED BY US FOREST SERVICE)

The U.S. Forest Service is divided into nine regions, each with a Heritage Program Leader responsible for overseeing the Heritage programs on the U.S. Forests and National Grasslands throughout the United States and its territories. This symposium highlights the celebration of 50 years of the National Historic Preservation Act and its implementation on Forest Service managed lands. Each regional presentation showcases success stories about caring for the heritage resources under their watch, the innovative approaches used, while focusing on the many partnerships that without them, the monumental task to meet the direction of the NHPA (Sections 106 and 110) could not have been fulfilled. It really is all about "Partnerships!"

[166] Symposium • LONG-TERM SETTLEMENT DYNAMICS AND LAND USE ON THE MANI PENINSULA OF SOUTHERN GREECE

This session presents the results of recent multidisciplinary research conducted in the Mani Peninsula in southern Lakonia, Greece. The papers in this forum discuss the evolution of settlement and land use on the peninsula during the later Holocene, focusing on case studies from the Neolithic through the Ottoman periods, ca. 6,000 B.C.E.–1900 C.E. Much of the research presented in this session is related to investigations conducted under the auspices of The Diros Project, which was established by a team of international researchers in 2010 to catalog and publish the Neolithic material from ongoing excavations in Alepotrypa Cave and to survey the surrounding Diros Bay in an attempt to place the cave site into a regional context. Several subsequent projects have been undertaken as offshoots of the work in Diros Bay, the results of which contribute to the overall understanding of settlement dynamics in the broader region.

[167] General Session • BRAZILIAN ARCHAEOLOGY AND ETHNOARCHAEOLOGY

[168] General Session • NEW APPROACHES IN SOUTHWESTERN ARCHAEOLOGY

[169] Symposium • THE CERRO JAZMÍN ARCHAEOLOGICAL PROJECT 2008-2015: DISCUSSING EARLY URBANISM AND CITY LIFE IN LATE AND TERMINAL FORMATIVE MIXTECA ALTA, MEXICO

The Cerro Jazmín Archaeological Project investigated from 2008 to 2015 an early urban center in the Mixteca Alta, a highland region of Oaxaca, Mexico. Researchers involved in the project gather in this bilingual session to discuss their work, which spans from regional studies, to intra-site spatial analyses, archaeological excavation and artifact analysis, physical anthropology, faunal and paleobotanical studies, and chemical analyses on human bone, lithic, and ceramic artifacts. Recent research finds will be presented, providing new information on urban households and their mortuary practices, economic, and ritual activities. The information presented also speak to the specialized function of this Late/Terminal Formative and postclassic highland city and its regional sociopolitical context and environmental impact. Project results will be discussed in relation to existing case studies on contemporary Late Formative Mesoamerican urban centers. The emerging results contribute to the growing body of knowledge and theoretical discussions on urbanism worldwide.

[170] Symposium • PAPERS IN HONOR OF LAWRENCE GUY STRAUS

This symposium honors Lawrence Guy Straus's four decades of research in Paleolithic archaeology and 20 years' service as the editor of the *Journal of Anthropological Research*. Straus is best known for his long-term research in the Vasco-Cantabrian Upper Paleolithic, though his 40-year career has seen projects in Belgium, Portugal, and France as well as Spain. His research syntheses have advanced the understanding of long-term behavioral change in Paleolithic societies and influenced two generations of Paleolithic archaeologists. In this session, we invite fellow archaeologists to reflect upon the intellectual and personal influence Lawrence's work has had on our lives and research. The invited papers presented in this session trace Lawrence's long career and highlight his contributions to Paleolithic research and researchers.

[171] Symposium • INEQUALITY FROM THE BOTTOM UP: MEASURING AND EXPLAINING HOUSEHOLD INEQUALITY IN ANTIQUITY

Archaeologists have traditionally approached social evolutionary questions from the top of the mound (pyramid, Great House, ziggurat). But what was going on down below was at least as important for the political structure and long-term prospects of society. In this session, we present new, unpublished data on degree of inequality in prehistory in a number of times and places, measured using Gini indices or closely related measures of concentration in a distribution. We are particularly interested in wealth disparities measured at the level of the household, based on attributes such as floor area, storage area, etc. We also grapple with methodological issues arising from such endeavors; for example, what is the association between measures of inequality in burial assemblages and those based on household-based data? How do we gain a complete picture of the structure of inequality in a complex society? The papers also review and summarize suites of such measures to make arguments for or against models for variability in inequality through time or across societies.

[172] Symposium · COLOR, STRUCTURE AND MEANING IN ANCIENT ANDEAN FIBER ARTS

Color is among the most notable visual features of the material world of every society, from manufactured objects (e.g., textiles, ceramics, paintings, etc.) to the landscape. This symposium focuses attention on color as a meaningful element in the material world of the precolumbian Andes. The central problem will be to address the modes of production, uses, and the meanings of color in fiber arts (textiles, khipus, wrapped sticks, etc.) and other media. This symposium aims to develop a broad understanding of how color differences and color patterning may have constituted a domain of signs and symbols that were drawn on and manipulated by crafts persons from the archaic through the early colonial period in the Andes. Ultimately, the goal of this symposium is to take interpretations and conclusions outside the narrow field of textile studies where they can be of importance for the understanding of social organization and structure, ritual, and other social practices.

[173] General Session · CHINA AND JAPAN**[174] Symposium · METHODOLOGICAL TOOL OR PARADIGM SHIFTER? ASSESSING THE STATUS OF GIS IN ARCHAEOLOGICAL RESEARCH**

Over the past few decades, geospatial technologies have cemented themselves as critical tools for analyzing and synthesizing archaeological data. The number of geospatial techniques currently used in archaeology is numerous and wide ranging in their functionality, varying in theoretical underpinnings, data harnessed, mathematical and spatial formulae implemented, hardware and software required, output produced and—not least—in the questions examined about past human behavior. But to what degree are we using geospatial techniques to actually answer the hypotheses we set out for them? What kinds of insights about past social, economic, and ideological processes have been realized via these means? Do these geospatial tools have the potential to shift theoretical paradigms, fundamentally altering how we think about the past and/or the ways that archaeological research is conducted? If so, when can we expect such changes to transpire and what might these changes look like? For this session, we invite papers that identify where archaeology currently stands as a GIS-using discipline; explain how these technologies have served us well and how they could be improved; and define a new geospatially-driven research paradigm, one involving enhanced GIS inquiry and more nuanced examination of socio-natural processes and transformations in the past.

[175] Symposium · ROCK ART AND SACRED SPACES: RECENT APPROACHES TO THE STUDY OF RITUAL LANDSCAPES

Landscape features can have varying degrees of sacredness. Both prehistoric and historic peoples lived, as many nonwestern still do today, within ritual landscapes in which natural features such as caves, springs, and isolated cliffs often represented sacred places imbued with spiritual power. Sacredness also resided in the built environment with rock art sites and burial places created by earlier peoples incorporated within the cosmologies of later peoples. Networks of natural and constructed places gave human lives meaning by linking them to present and past activities across the landscape. These two aspects were not separate but intertwined with rock art sites, for example, serving as tangible links to the world of the ancestors to later peoples. The researchers in this symposia use in depth regional studies as well as innovative methodologies such as GIS and LIDAR to examine the relationship of rock art to other natural and constructed sacred landforms within a global landscape perspective.

[176] Symposium · NEW METHODS IN ZOOARCHAEOLOGY

(SPONSORED BY ZOOARCHAEOLOGY INTEREST GROUP)

Conventional zooarchaeological methods are critical and serve as a fundamental baseline towards generating robust data, yet these frameworks may not always be applicable to various datasets. Furthermore, zooarchaeologists are continuously developing new techniques and procedures to further enhance our understanding of faunal assemblages through time and across space. This session serves to present recent and new approaches and methodologies. The session ultimately aims to synthesize dynamic discussions among the zooarchaeology community.

[177] Symposium · FIRE, FOOD, FARMS, AND FORTIFICATIONS: RECENT ADVANCES IN THE ARCHAEOLOGY OF AFRICA

(SPONSORED BY SOCIETY OF AFRICANIST ARCHAEOLOGISTS)

In this session, we present results of new and emerging work focusing on the African continent. Papers represent the wide range of periods and diversity of research topics in Africanist archaeology. Major themes include early fire and tool use; the beginnings of food production; and socioeconomic and settlement shifts during the Atlantic era. Regions covered span the continent, including Egypt and the Horn, as well as north, east, west, and southern Africa.

[178] Symposium · OLMEC, CHAVIN, AND THINGS IN BETWEEN: A COMPARATIVE APPROACH TO EMERGENT COMPLEX SOCIETIES

The goal of this session is to revisit the Formative Americas as an integrated field of study, and consider its role in nomothetic interpretations of emergent social complexity. Over the last two decades, our refined understanding of early precolumbian cultures has given us new tools to enable these cross-cultural analyses. Integrating this growing dataset with new approaches such as hybridity, neo-diffusionism, and cognitive anthropology, facilitates the exploration of the independent, yet related, social organizations of North and South America. As a first step toward exploring these opportunities, this session asks a diverse set of participants to interpret their scholarship on emergent complexity through an explicitly comparative lens. These objectives extend beyond particularist approaches to cultural horizons like Olmec and Chavin, and enable a meaningful consideration of heterogeneity in emergent precolumbian social structures. By comparing Mesoamerica and the Andes as test beds of emergent social complexity, this session aims to interrogate universalist explanations, and guide continuing research on these phenomena worldwide.

[179] General Session · CRAFT PRODUCTION AND EXCHANGE IN MESOAMERICA

[180] Poster Session · EAST AND SOUTHEAST ASIA

[181] Poster Session · AFRICAN ARCHAEOLOGY

[182] Poster Session · THE ARCHAEOLOGY OF OCEANIA

[183] Poster Session · CARIBBEAN ARCHAEOLOGY

[184] Poster Session · EASTERN MEDITERRANEAN, CAUCASUS, NEAR EAST

[185] Poster Session · WESTERN CANADA, BRITISH COLUMBIA, NORTHWEST COAST

[186] Forum · ADDRESSING SEXUAL HARASSMENT AND ASSAULT IN ARCHAEOLOGY

(SPONSORED BY WOMEN IN ARCHAEOLOGY INTEREST GROUP)

Recent studies show there is a sexual harassment and assault problem in the field sciences, including archaeology. The SAA Board of Directors, Ethics Committee, and RPA are drafting a principle advocating for respectful and ethical conduct between colleagues. The new principle is an important first step in changing the professional climate in our field. This forum invites the archaeology community to engage in conversation and create avenues for implementing the principle of respect. A panel of archaeologists from across the discipline will bring their experience and perspective to the discussion of these issues. The development of educational programs, a support system for survivors, and a large scale survey specific to archaeology are some ideas for further discussion.

[187] Symposium · FORENSIC ARCHAEOLOGY

This session aims to highlight recent projects from those active in forensic research and case work. As forensic archaeology continues to grow as a discipline and is utilized with increasing frequency by law enforcement officials, case studies are of great use to those engaged in forensic field work. In addition, research is essential to strengthening the theoretical foundations of forensic archaeology. This session also features research projects that will be of benefit to future forensic work and criminal justice. Those involved in research have the opportunity to address areas untouched by current practitioners. By bringing together researchers and practitioners, this symposium aims to create meaningful dialog and spur collaboration.

[188] General Session · LANDSCAPE, SETTLEMENT PATTERNS, AND ARCHITECTURE IN EUROPEAN ARCHAEOLOGY

[189] General Session · ARCHAEOLOGY OF THE MEDITERRANEAN

[190] General Session · CANADIAN ARCHAEOLOGY

[191] Symposium · HERITAGE TOOLS FOR TACKLING CLIMATE CHANGE

Heritage managers everywhere increasingly observe climate-change related impacts to the resources of which they are stewards. Such observations provide notice that we must begin to manage cultural resources in new ways—to adapt to continuous change that we do not yet fully understand.

Climate change brings with it a diverse set of threats, huge and hydra-like in their complexity and ferocity. We may not fully understand the changes that the world is about to undergo, but the severity and immediacy of the many problems posed by those changes compels us to act. The disciplines associated with the management of cultural heritage have much to offer climate change response and adaptation planning. Heritage sites serve both as a source of information past humans' adaptation to changing climate, and as tangible links between contemporary people, their cultural identities, communities, and important places. This session presents an array of tools for managing cultural resources in the face of climate change so they may be shared and valued well into the future. The tools include identification of the diversity of potential impacts of climate change on resources, modeling of threats in GIS, crowdsourcing monitoring, and planning approaches to manage and address risk.

[192] Symposium · CAPTIVITY AND SLAVERY IN VIKING AGE SCANDINAVIA

Perceptions of Viking raiding have often considered these activities to have been primarily motivated by the acquisition of portable wealth and plunder. However, explicit accounts in historical sources and sagas demonstrate that many Viking groups sought not only material wealth but also to abduct large numbers of captives. While some captives were quickly ransomed or killed, there is also evidence attesting to the long-distance trafficking, employment, and exploitation of slaves across a geographical area that would encompass much of the Viking world, ranging from southern Spain to the lands of the Rūs in the east. In recent years, the evidence for captivity and slavery has become better conceptualised within theoretical and methodological frameworks. Recent novel and innovative analyses of archaeological material have similarly allowed light to be shed on the nuances of slavery among Scandinavian societies. This session will provide a multidisciplinary forum for the presentation of both new and continuing research on captivity and slavery during the Viking Age, in addition to the discussion of these practices within their wider contexts.

[193] General Session · HISTORICAL ARCHAEOLOGY OF THE MIDWEST**[194] General Session · CHACO ARCHAEOLOGY****[195] General Session · MORTUARY PRACTICES IN THE ANCIENT SOUTHWEST****[196] General Session · ARCHAEOLOGY OF THE LATE INTERMEDIATE PERIOD AND INKA OCCUPATION****[197] General Session · LANDSCAPE STUDIES****[198] Symposium · FRAMING THE LOCAL WITHIN THE REGIONAL: CURRENT RESEARCH IN THE CUSCO REGION, PERU**

Cusco, Peru, is best known as the navel of the Inca universe, but it was also home to postglacial high altitude hunter-gatherers, a network of Formative villages, Wari imperial colonies, rivals to early Inca elites, and a major locus of Spanish colonial rule. Coming out of a prolific phase of regional survey programs, the Cusco region has seen an explosion of problem-based excavations and analytical laboratory-based research that cuts across disciplinary lines. These projects are refining our understandings of biological, economic, and sociopolitical development in the region from the Archaic to Colonial periods. This symposium brings together scholars from diverse sociocultural and biological perspectives to explore patterns of change over the short term and *longue durée*. Papers approach themes such as migration, ties connecting Cusco to the outside world, the development of multiple and changing political agendas, and how local populations navigated all of the above.

[199] General Session · LEVANT ARCHAEOLOGY**[200] General Session · PLAINS LITHIC ANALYSIS****[201] Debate · THE SOUTHWEST IN THE WORLD: A DISCUSSION OF TIME, DISTANCE, POLITICS, SCIENCE AND HISTORY IN SOUTHWESTERN PREHISTORY**

Steve Lekson recently offered a narrative history of the ancient southwest, and now he proposes to use that history scientifically, in a book titled "Southwest in the World." The project has many pitfalls: how to write history for prehistory, how to recognize and control bias inherent in the field, how to choose appropriate questions, and how to address those questions. The methodological issues are as challenging as the substantive product. In the new SAA debate format, Lekson will present his most-recent thoughts on the Greater Southwest—its history and the potential uses of that history—to a panel of distinguished discussants. They will respond and question, followed by open-format debate/discussion.

[202] Forum · FOR THE RECORD: ARCHAEOLOGICAL ARCHIVES IN THE 21ST CENTURY

(SPONSORED BY COMMITTEE FOR MUSEUMS, COLLECTIONS, AND CURATION)

Whether in the writing or researching phase of a project, accessioning/deaccessioning a collection, researching the history of archaeology, or reviewing a NAGPRA case, archives play an important role. The earliest archives in the United States can be traced back to the eighteenth century—well before modern archival standards existed. Since the professionalization of archaeology, museology, and archival science, archives have grown to astounding levels—a trend unlikely to change. Although this has led to some archives becoming inaccessible or highly restricted, other archives are quickly being digitized and available to anyone from anywhere. This does open up new possibilities and concerns about access, as many archives contain important yet sensitive information about cultural heritage and the history of the discipline.

Regardless of the age of, content within, or structure of an archive, they are important links that connect many pasts (both ancient and recent) to an always-unfurling present. This forum seeks to explore the ways in which archives can "speak" to archaeologists and other stakeholders interested in the past and the power struggles that ensue. While discussants will focus on a particular archive's management, creation, and/or utilization, this forum seeks to consider the practical and theoretical challenges and benefits of archival work.

[203] Forum - TRIBAL HISTORIC PRESERVATION IN THE UNITED STATES: KEY ISSUES AND DIALOGUES*(SPONSORED BY INDIGENOUS POPULATIONS INTEREST GROUP; COMMITTEE ON NATIVE AMERICAN RELATIONS)*

In the United States, federally recognized tribal communities can apply under Section 101(d)(2) of the National Historic Preservation Act for status as a Tribal Historic Preservation Office (THPO). Obtaining THPO status is a significant achievement in regards to the goals of tribal self-governance and self-determination, enabling a tribal nation to assume authority over the care for and protection of tribal heritage. This forum is part of an ongoing dialogue at the Society for American Archaeology annual meetings that brings together Tribal Historic Preservation departments from across the United States to discuss the unique issues of tribal heritage management. Panelists will address how their offices balance the unique requirements of local, state, and federal heritage preservation regulations with the specific needs and cultural values of the communities that they represent. The goal of these discussions is to generate connections and support between THPOs, archaeologists, and heritage managers.

[204] Poster Session - SOUTH AMERICAN ARCHAEOLOGY II**[205] Poster Session - SOUTH AMERICAN ARCHAEOLOGY III****[206] Poster Session - SOUTH AMERICAN ARCHAEOLOGY IV****[207] Poster Session - SOUTH AMERICAN ARCHAEOLOGY I****[208] Symposium - PUBLIC AGENCIES AND UNIVERSITIES: PARTNERSHIPS FOR THE PAST**

Federal, state, tribal, and even municipal agencies have formed partnerships with Anthropology and Archaeological programs at a number of American universities. These partnerships have been mutually beneficial in many ways. The agencies get cost-effective access to faculty expertise, a role in the development of young professionals, and the latest in research technologies and approaches. Universities benefit from new funding streams, practical and challenging research projects, and growth opportunities for both students and faculty. This session will highlight the programs, accomplishments, challenges, and lessons learned from six agency-university partnerships and propose ways they can be improved and expanded.

[209] Symposium - UNDERSTANDING VISUAL CULTURE WITHOUT TEXTUAL SOURCES: WHAT ARE THE POSSIBILITIES FOR ANALYSIS?

This symposium addresses challenges for scholars who are committed to working directly with precolumbian materials. Today historical texts are scrutinized for epistemological, interpretative, and rhetorical import, but they may not be directly relevant to "pre"colonial culture due to disjunction and gaps between the dates of sources and visual culture. Recent publications and panels have addressed a general crisis in art history and, more specifically, the future of precolumbian art history. In many ways archaeology is a closer intellectual and temporal ally of precolumbian art history than are contact- and colonial-period art history; indeed, the fields share temporal frames and material objects, and seek to understand how societies operated at specific points in time. Archaeologists and art historians will discuss Native North America, Mesoamerica, and South America, and address analytical strategies that turn away from textual documentation and focus on theories of the object; ocular, auditory, and kinesthetic aspects of visual culture; the Spatial Turn; the broad reach of the Digital Humanities; and other avenues. Papers also address how developments in archaeology and art history speak back to larger debates about method and theory and what the two disciplines have to share around the joint problem of objects without texts.

[210] Symposium - GLOBAL CHANGE THREATS TO THE ARCHAEOLOGICAL AND PALEOECOLOGICAL RECORD

Archaeological sites with good organic preservation are increasingly recognized both as sources of data on past human behavior and cultural organization, and as valuable resources for paleoenvironmental reconstruction, with potential similar to other paleoenvironmental proxy records. They hold valuable information needed to place human ecodynamics in the broad spatial and temporal perspective essential to developing a meaningful and actionable understanding of sociocultural systems, often without the ambiguities of correlating between archaeological deposits and distant natural proxies.

Yet, just as new methods increase our ability to retrieve and study this information, global climate change poses a dire threat, both to the wealth of organic data in such sites, and to many of the sites themselves. Global change-related threats include: increased coastal erosion (due to sea level rise, increases in number and/or strength of storms, and diminished sea ice in Polar regions), increased riverine erosion (due to increases in precipitation amount or intensity and increases in glacial melting), drying of waterlogged sites and bogs (due to hydrological changes), changes in land use (due to changes in agriculture or displacement of populations). In high-latitude areas, the thawing of permafrost is a major and imminent threat to the archaeological and paleoecological record.

[211] Symposium - GLOBAL PERSPECTIVES ON THE IMPACT OF DRASTIC ENVIRONMENTAL CHANGES IN HUNTER-GATHERER TECHNOLOGIES

Researchers have long debated the impact of climate change on human culture and particularly in hunter-gatherer societies. Climate drifts, particularly abrupt ones, have been continually seen as major prompts for rapid technological and cultural innovation.

Recent advances in paleoclimatic reconstructions and ongoing developments in the quality and chronological resolution of archaeological data have allowed a better understanding of the extent to which patterns of specific environmental changes triggered modifications in the technological systems of hunter-gatherers.

This session intends to bring together contributions addressing strategic changes in the organization of hunter-gatherer technologies as a response to drastic environmental shifts. Discussed topics will include climate-driven alterations in lithic, organic tools and ceramic production, pyrotechnology, hunting strategies techniques, pigment processing, use of plants and adornments, from all chronologies and geographical contexts.

We aim to contribute to the continuing debate over cause and effect in the interplay between humans and climate and to a better understanding of the role and magnitude of environmental determinism in the archaeology of hunter-gatherers.

[212] Symposium · THE COPAN KINGDOM AND ITS POLITICAL INTERACTIONS ALONG THE SOUTHEASTERN MAYA FRONTIER

The Copan kingdom sat on the edge of the Maya lands well away from the competitive tightly-spaced kingdoms of the Peten. Its political alliances reached both across the Maya world and over the frontier into non-Maya regions to the south and east. Both current excavations, and re-analysis of artifacts from older projects, are bringing new definition to the web of relationships Copan held with its neighbors and trading partners along this frontier, demonstrating strong ties previously unknown with some communities, such as Tazumal in El Salvador, and refining interactions with others in the areas of Cucuyagua, Sensenti, and Rio Amarillo. In this session, scholars use a range of data from flakes of chert and obsidian to finely carved macaw markers, to hieroglyphic inscriptions, copador ceramics, representations of K'inich Yax K'uk' Mo', differences in cuisine, and GIS modeling, to trace these relationships. Some of the papers explore not only how Copan's intercession changed communities, but also what happened once that intercession was gone.

[213] General Session · HISTORICAL ARCHAEOLOGY IN THE SOUTHEAST

[214] Symposium · EXPLORING THE MICROSCALE: ADVANCES AND NOVEL APPLICATIONS OF MICROSCOPY FOR ARCHAEOLOGICAL MATERIALS

Archaeologists employ a wide range of microscopy techniques to understand subtle traces of past behaviors in the archaeological record. This session explores innovative methods of analyzing archaeological traces at the microscale, whether it is through new developments in microscopy or novel applications of established techniques. These methods are not limited to a specific type of material culture and thus this session explores microscopy for the study of lithics, bones, metals, residues, and other materials. Furthermore, analytical techniques using microscopy draw on numerous disciplines including physics, engineering, and chemistry, encompassing a wide range of techniques to visualize and record microscopic traces. By bringing together research on different materials with diverse approaches, this session aims to develop new collaborations to explore archaeological materials at the microscale. Reaching out beyond the archaeological realm into interdisciplinary pursuits, we gain new insights into the past.

[215] Symposium · THE POETICS OF PROCESSING: MEMORY FORMATION, COSMOLOGY AND THE HANDLING OF THE DEAD

Throughout time, the human body has acted as a canvas for survivors. Processing of the body varies in time and space and is contingent upon the relationship between the living and the dead. Body processing acts as a mechanism for the recreation of cosmological events and is important for memory creation. The creation of processed bodies has the capacity to transform space, ritually open and close spaces, and to reinforce relationships between the living and the dead. This session will focus on how the processing of the body, in any way that occurs, impacts and is impacted by the use of the body as a social tool.

By including both old and new world case studies, general patterns of human behavior can be compared and contrasted. Through a large-scale analysis, we can examine common threads of the use of the body as a social tool that builds a relationship between the living and the dead, memory creation, and the use of space for both the living and the dead.

[216] Symposium · IMPACTS, ARTICULATIONS AND INNOVATIONS IN THE ARCHAEOLOGICAL STUDY OF THE MESOAMERICAN GULF COAST: SPATIO-TEMPORAL, ECONOMIC AND DEMOGRAPHIC ORGANIZATION / INCIDENCIA, ARTICULACIÓN E INNOVACIÓN DEL CONOCIMIENTO ARQUEOLÓGICO EN LA COSTA DEL GOLFO MESOAMERICANO: ORGANIZACIÓN ESPACIO-TEMPORAL, ECONÓMICO

Through this symposium we are establishing a dialog among specialists in the prehispanic societies of the Mesoamerican Gulf Coast. The objective is to evaluate the impact and articulation of archaeological and iconographical knowledge that has been documented throughout the region. This session is focused primarily on the critical review of advances and methods in systematic investigations of demographic transformations, chronology-building, and economic relationships that serve as important building blocks to better understand the social organization of prehispanic sites throughout the Gulf lowlands.

En este simposio se establecerá un diálogo entre especialistas de sociedades prehispánicas de la Costa del Golfo Mesoamericano. El objetivo es evaluar la incidencia y articulación del conocimiento arqueológico e iconográfico que se tiene actualmente en la región. Esta sesión está enfocada principalmente en la revisión crítica de avances y métodos de investigación sistemática, así como de elementos demográficos, cronológicos y económicos, que constituyeron los fundamentos de organización social de los habitantes de algunos sitios prehispánicos de la Costa del Golfo.

[217] Symposium · ENVISIONING AND RE-ENVISIONING ARCTIC ARCHAEOLOGY: THE ENDURING LEGACIES OF J. LOUIS GIDDINGS (1909-1964)

J. Louis Giddings (1909–1964) undertook pioneering archaeological research in the Arctic that integrated natural science perspectives with archaeological investigations—at site-specific, regional, and trans-continental scales; ethnographic and folkloric research; collaborations with indigenous communities at all levels of research; and experimentation with cutting-edge methods. He introduced dendrochronology and dendroclimatology to Arctic archaeology, developed the concept of "beach ridge

archaeology"—using the formation of maritime beach ridges to date sequences of archaeological sites upon them; discovered the Denbigh Flint complex—paving the way for understanding ASTt connections from eastern Siberia to Greenland; established the western Arctic's Holocene archaeological sequence through research at Cape Krusenstern and Onion Portage—the first deeply stratified interior archaeological site investigated in Alaska; and brought his findings to scientific and public attention through scientific articles, popular books, and Brown University's Haffenreffer Museum of Anthropology. Since Giddings' death in 1964, his perspectives, students, and collections have guided or influenced northern research. In this symposium, scholars working on sites, collections, ideas, approaches, and problems linked to Giddings' work reassess his legacy and explore what remains to be done with the collections, sites, and concepts on which his research was based as we set new priorities for northern research.

[218] Symposium • HUMAN ADAPTATIONS TO LATEGLACIAL AND EARLY HOLOCENE CLIMATE AND ENVIRONMENTAL CHANGES: TOWARDS A TRANS-ATLANTIC PERSPECTIVE (PART 1)

Increasing resolution of paleoenvironmental records are beginning to show the spatiotemporal dynamics of ecosystem responses to different climate changes during the Lateglacial and early Holocene. A primary cause of many of these climate changes were glacier meltwater outbursts from the Laurentide Ice Sheet into the North Atlantic. At present, there has been more consideration of the impacts of these different abrupt climate change events on European than North American human populations. This session sets the foundations for bridging this gap and connecting researchers investigating these questions in Europe with researchers investigating these questions in North America. The session seeks to know what particular periods of climate and environmental change impacted both North American and European populations, as well as the periods when there were no such impacts, and where these impacts or non-impacts occurred. Presentations will focus on questions of: 1) paleoenvironmental and archaeological data quality and amenability for integration and tests of correlation, 2) temporal leads and lags in local or regional ecosystem and/or human responses to climate change events, and 3) the specific adaptive strategies employed in these human responses (e.g., population collapse, mobility, social networks, raw materials, lithic technology).

[219] Symposium • COLONIAL ENCOUNTERS IN THE PREHISPANIC ANDES

Over the past three decades, research on colonial processes in the south Central Andes has advanced substantially. This session explores the social, political, economic, and ideological transformations in the Andean past through a millennia of colonization in southern Peru. We examine the roots of social inequality in colonial settings through a diverse set of archaeological data, with a special focus on the Wari, Tiwanaku, Inca, and Colonial Spanish enterprises. This work, built upon the Programa Contisuyo's three decades of research, draws now on the work of the next generation of scholars working in the region under the rubric of the Programa Colesuyo, a multi-year, interdisciplinary research program that unites three excavation projects and a set of museographic studies to highlight patterns in the process of colonization over the past 1,500 years.

[220] Symposium • NEW INSIGHTS INTO THE ARCHAIC OF THE CIRCUM-CARIBBEAN

With the development of new trends in long-term perspectives on human ecodynamics, multidimensional approaches to biocultural evolution, and synergies between modellers and palaeoecologists, research on the early peoples of the circum-Caribbean became increasingly interdisciplinary and informed by the realization that humans are not passive adaptors to their environment but creatively shape and re-shape it as a landscape, while being simultaneously molded through dynamic biological, sociocultural, and environmental feedbacks. Concomitantly with these theoretical shifts, aided by increasingly sophisticated techniques, the approaches aimed at disclosing the origin of the Archaic Age populations, their mobility and exchange, modes of life, and transitions to horticulture have also been transformed. No longer are these phenomena perceived as caused by single 'revolutionary' events, but as multistranded trajectories depending on combinations of economic, social, and ideological processes, liberated from the dependency on propitious environmental conditions, and from the previously inseparable co-phenomena of sedentarism, domestication, and pottery making. The approaches have also been changed by the denial of any clear-cut distinction between foragers and farmers' modes of living and world viewing. We aim to discuss new theoretical, methodological, and analytical approaches that are used to understand the origins and dynamics of the Archaic Age in the Circum-Caribbean.

[221] Symposium • ENGENDERED ARCHAEOLOGIES: INTERSUBJECTIVITY IN ARCHAEOLOGICAL HERITAGE PRACTICE AND INTERPRETATION

(SPONSORED BY WOMEN IN ARCHAEOLOGY INTEREST GROUP (WAIG))

Heritage work, including archaeology and related disciplines, has been recognized as an intersubjective endeavor but theoretical examinations largely sidestep gender as a framework for analysis. However, critical approaches to participatory models of heritage practice necessitate a theoretical and action-oriented engagement with gender. This session aims to bring together two currently disparate contributions to archaeology— stakeholder-focused archaeological heritage work and an analysis of gender in the archaeological record. We hope to examine the complex entanglements that arise when working with stakeholders and interpreting and representing archaeological remains. Explorations may include feminist, queer, postcolonial, indigenous, and other theoretical frameworks as well as considerations of aspects of selfhood including race, class, religion, age, etc. These may also draw on methodologies like community-based, collaborative, activist, participatory, ethical, action-oriented, and public approaches. How are collaborative archaeology projects and heritage work more broadly engendered? How do participants in archaeological and heritage projects perform and enact gender? How do discourses of masculinity, femininity, and queer identities influence all phases of research: from conception through public engagement, fieldwork, analysis, presentation, publication, and preservation? At the heart of these questions lies an exploration of practice, power, memory, and narrative production that will enhance efforts at preserving and understanding heritage.

[222] Symposium • CARIBBEAN ENVIRONMENTAL ARCHAEOLOGY: NEW PERSPECTIVES ON HUMAN ECODYNAMICS AND SOCIAL RELATIONS

(SPONSORED BY ISLAND AND COASTAL ARCHAEOLOGY INTEREST GROUP)

Worldwide, archaeological research increasingly demonstrates the complexity of interactions between human groups and the

environment. In the Caribbean, this complexity is underscored by environmental archaeology studies that reveal how past landscapes and seascapes have been shaped at multiple scales by interlinked cultural and ecological systems. The analytic methods of zooarchaeology, archaeobotany, geoarchaeology, and biochemistry have become powerful tools to understand these dimensions of connectivity. This session will examine human social and ecological relations across space and time in the Caribbean based on various environmental and biogeochemical proxy records. Session themes include, but are not limited to, human mobility and interaction, animal translocation, anthropogenic environmental impacts, cultural responses to ecological change, ecosystem and human social resilience, insular adaptation, and cultural diversity across space. The session will highlight the many dynamic lines of inquiry in environmental and biogeochemical archaeology under investigation in the Caribbean, situate Caribbean-based research within broader topics of environmental archaeology and human ecodynamics, and foster dialogue with researchers pursuing related studies in regions elsewhere.

[223] Symposium • BIOLOGICAL EXCHANGE IN THE ANTHROPOCENE: ARCHAEOLOGICAL AND GENETIC PERSPECTIVES

Human trade, travel, and transport have led to the movement of a vast number of plants, animals, and pathogens, and the creation of cosmopolitan assemblages of organisms across all continents. Perhaps the best-known example of large-scale human-mediated translocation is the Columbian Exchange, which famously led to the exchange of a diverse array of domesticates, weeds, and diseases between the Old and New Worlds in the decades after 1492. Archaeological and genetic research have nonetheless begun to reveal the earlier roots of biological exchange in various global contexts. This session will adopt a multidisciplinary perspective, exploring biological exchange in the Anthropocene using the latest techniques in archaeology and genetics.

[224] General Session • CURRENT RESEARCH IN THE MAGREB, EGYPT AND THE HORN OF AFRICA

[225] General Session • MISSISSIPPIAN BUILT ENVIRONMENT AND DAILY PRACTICES

[226] General Session • COLLABORATIVE AND COMMUNITY ARCHAEOLOGIES

[227] General Session • ARCHAEOLOGY OF OCEANIA

[228] Symposium • FROM THE BOTTOM UP: HILLTOP USE AND SIGNIFICANCE IN ANTIQUITY

Archaeologists have interpreted hilltop sites as spaces serving heterogeneous purposes, ranging from functional explanations as defensive outposts to symbolic interpretations as ceremonial places. In this session, we seek to move beyond such a dichotomy to understand how hilltop settlements, fortifications, shrines, or pilgrimage areas were integrated into the larger political system, recognizing that the exercising of political authority often relies more on ideology than force to establish security. The prominence of these high points in the landscape, along with the resulting viewsheds they offered, shaped people's understanding of the landscape. Hilltops, therefore, can be interpreted as a crucial locale to a central authority with the intent to control the landscape, as well as a source of power to people attempting to flee a state's influence. If such environments can be at different times peripheral or central to the political and religious agenda of a state authority, archaeologists can track changes in socio-political processes by examining settlement histories at these elevated spaces. Do hilltops indeed represent a refuge from state authority, and if so what cultural processes drive people to seek out such areas? Alternatively, are hilltops crucial to state control of the landscape and integrated into surrounding settlement structure?

[229] Symposium • ARCHAEOLOGY IN THE NATIONAL PARK SERVICE 1916-2016

In 2016, the National Park Service (NPS) celebrates two anniversaries: 100 years of managing archaeological resources for the public's benefit and 50 years of the Southeast Archeological Center. As we look to the next century, the history of NPS archaeology is something to celebrate for its contributions to the nation and to the world. Archaeology was a primary motivator for preserving lands under federal management and it continues to drive cultural resources work as well as interpretation and education. It underlies the most significant issues facing the NPS today and into the future: climate change, relevance to all peoples, population shifts to urban areas, economic benefits of parks, the importance of grants, and site evaluation programs to communities nationwide. Presenters in this session will present on a range of topics looking to the past and to the future of NPS archaeology.

[230] Symposium • CAVE ART AND ARCHAEOLOGY AT OXTOTITLÁN, GUERRERO

Oxtotitlán Cave, renowned for a corpus of Formative polychrome murals, is the focus of recent NGS and NEH-funded collaborative research involving scholars from several U.S. institutions, the National Autonomous University of Mexico, and representatives of the archaeological committee from the modern community of Acatlán, Guerrero, where the site is located. The cave, one element of a large Early to Late Formative settlement encompassing nearby terraced hillslopes and surrounding settlement zones, is a primary focal point of recent investigations. Research unites the high resolution photographic, computational, photogrammetric documentation, and technical drawings of the art with the archaeological study of the cave and larger site. Our current research builds on earlier work undertaken by David Grove, Paul Schmidt, Sandra Cruz Flores, and other UNAM and INAH-affiliated archaeologists and conservators. In this session, we discuss the on-going results of the mural documentation project, a program to date the art employing micro sample AMS radiocarbon dating, excavations both in association with the art and elsewhere at the site, and the drone-based photogrammetric survey of the entire complex within its geographical setting.

[231] Symposium • INTERACCIONES SOCIALES, MANEJO Y GESTIÓN EN LA ARQUEOLOGÍA MEXICANA

La investigación arqueológica, especialmente en los espacios donde confluyen sitios y vestigios con poblaciones vivas, no podría ser posible sin un adecuado proceso de gestión y trabajo conjunto entre los habitantes de estos lugares con las instituciones especializadas en su estudio. Así también la conservación y protección del patrimonio cultural son un reflejo de un adecuado trabajo de colaboración entre todas las partes involucradas en los trabajos realizados en estos.

El simposio presentado ofrece una serie de experiencias exitosas llevadas a cabo por investigadores que han realizado trabajos arqueológicos en México, país en el cual estos procesos de colaboración entre diversos actores tanto institucionales, de investigación y de la sociedad civil han hecho posible la consolidación de proyectos de gran envergadura, desde proyectos de larga duración hasta la puesta en valor de sitios ahora patrimonio cultural de la humanidad por la UNESCO, estos procesos son una muestra para los diversos proyectos arqueológicos que se piensan efectuar con la colaboración de los habitantes actuales de estas áreas, de la conformación de un marco de trabajo ético y responsable hacia los herederos de este patrimonio intangible.

[232] General Session • LITHICS IN ANCIENT NORTH AMERICA**[233] General Session • INKA ARCHAEOLOGY****[234] Poster Session • CENTRAL AMERICAN ARCHAEOLOGY****[235] Poster Session • MESOAMERICAN ARCHAEOLOGY I****[236] Poster Session • MESOAMERICAN ARCHAEOLOGY II****[237] Poster Session • MESOAMERICAN ARCHAEOLOGY III****[238] Poster Session • BEYOND THE SHORE: THE UNDERWATER MAYA PROJECT, PAYNES CREEK NATIONAL PARK, BELIZE**

A series of posters will illustrate recent work on the Paynes Creek Salt Works from the Underwater Maya Project, Department of Geography and Anthropology, Louisiana State University. This research is part of the larger long-term project in southern coastal Belize to further the understanding of how the coastal participated in the larger Classic and Postclassic Maya cultural sphere. The Classic period (A.D. 300–900) salt works were submerged by a sea-level rise that occurred after the Late Classic (A.D. 700–900). The salt works are associated with large-scale workshop production using the technique of evaporating brine in pots over fires, resulting briquetage—the broken salt-making pottery. Remnants of wooden structures used for production and storage of salt, were preserved in the anaerobic red mangrove (*Rhizophora mangle*) peat below the sea floor. The posters will include an overview of the project and new directions for future research, dietary implications from a shell midden located at the Eleanor Betty Site, a comparison of the workshops between the Paynes Creek and Placencia Salt Works, and an overview of the stratigraphy of two earthen mounds.

[239] General Session • ZOOARCHAEOLOGY IN THE SOUTHWEST**[240] General Session • MISSISSIPPIAN RITUALS****[241] General Session • MESOAMERICAN ICONOGRAPHY AND EPIGRAPHY****[242] Symposium • HUMAN ADAPTATIONS TO LATEGLACIAL AND EARLY HOLOCENE CLIMATE AND ENVIRONMENTAL CHANGES: TOWARDS A TRANS-ATLANTIC PERSPECTIVE (PART 2)**

Increasing resolution of paleoenvironmental records are beginning to show the spatiotemporal dynamics of ecosystem responses to different climate changes during the Lateglacial and early Holocene. A primary cause of many of these climate changes were glacier meltwater outbursts from the Laurentide Ice Sheet into the North Atlantic. At present, there has been more consideration of the impacts of these different abrupt climate change events on European than North American human populations. This session sets the foundations for bridging this gap and connecting researchers investigating these questions in Europe with researchers investigating these questions in North America. The session seeks to know what particular periods of climate and environmental change impacted both North American and European populations, as well as the periods when there were no such impacts, and where these impacts or non-impacts occurred. Presentations will focus on questions of: 1) paleoenvironmental and archaeological data quality and amenability for integration and tests of correlation, 2) temporal leads and lags in local or regional ecosystem and/or human responses to climate change events, and 3) the specific adaptive strategies employed in these human responses (e.g., population collapse, mobility, social networks, raw materials, lithic technology).

[243] Symposium · REALITIES ON THE GROUND: PASTS, PRESENTS, AND FUTURES OF THE NATIONAL HISTORIC PRESERVATION ACT

Fifty years after implementation, the National Historic Preservation Act shapes the majority of archaeological research and employment in the United States, including the Cultural Resource Management industry. The consultation process of Section 106 of the NHPA has resulted in the identification and preservation of a broad range of historic properties. However, the lack of regulatory mechanisms has resulted in the unmitigated destruction of many resources, including historic properties. Increasing engagement with Native American groups at various levels, most notably the development and growth of Tribal Historic Preservation Offices, has added layers of complexity to the Section 106 process, with varied results. In the twenty-first century, "Section 106 compliance" has created byzantine webs of relationships between archaeologists in the public and private sectors dependent on clients and governmental agencies for necessary resources such as funding, eligibility determinations, or staffing. Client pressures, inter-agency structures, and broader political realities create varied demands on those charged with identifying, researching, evaluating, and/or managing cultural resources in the United States. Authors in this session examine, analyze, and critique the growth of CRM over the last 50 years and explore possibilities for growth and change over the next 50 years.

[244] Symposium · TRASH RULES: INTRASITE ZOOARCHAEOLOGY

Faunal remains are an important type of trash for archaeologists interested in everything from subsistence strategies to the social negotiations of feasting to animals as symbols. Zooarchaeologists increasingly grapple with how contexts—be they residential areas, ritual spaces, or dedicated trash dumps—impact interpretations. Over the years, certain 'trash rules' have been suggested, linked to variables such as site function, specific activities, and physical and climatic parameters. This session revisits some of these and explores a few more, looking at diverse cultural and ecological settings and applying a range of analytic methods. What is gained when zooarchaeological analyses look more closely at intrasite spatial variations? What analytic approaches are productive in recognizing how the trash gets to where we find it, and what human choices were at play?

[245] General Session · CALIFORNIAN ARCHAEOLOGY**[246] Symposium · THE BELLE GLADE CULTURE REVISITED**

The Belle Glade culture is one of the least understood prehistoric cultures. The culture area is confined to the bounds of the Kissimmee River Valley and Lake Okeechobee Basin and terminates somewhere in the northern Everglades. Early investigations lacked the opportunities that methods and theories afford today. Many of the early conclusions regarding this culture were drawn from other regions and applied without the benefit of data-driven testing of these hypotheses. The lectures presented in this symposium will discuss the results and inferences made from recent investigations using modern methodologies in the Belle Glade region.

[247] General Session · THEORETICAL APPROACHES IN ARCHAEOLOGY**[248] Forum · ARCHAEOLOGICAL "ART": ART, MATERIAL CULTURE, VISUAL CULTURE, OR SOMETHING ELSE?**

Archaeologists and anthropologists agree that the modern, Western concept of "art" is misleading when applied to objects from other cultural contexts. Yet simply abolishing "art" and treating objects such as pictures, sculptures, and music as "material culture" may obscure how they interact affectively with people using them. A third, recent position reclaims "art" as a kind of material culture with specific aesthetic or social powers, sometimes linked into cosmological, sexual, racial, or social hierarchies. As a fourth approach, if "art" is our category of objects with special affective powers, do other peoples have equivalent—or radically different—categories? Can archaeologists investigate how ancient people understood the ontological nature, power, value, and danger of special things, how they affected people, and how people interacted with them?

This forum—sponsored by the Cambridge Archaeological Journal—poses several questions:

- Is the term "art" actually useful? If so, how? If not, what conceptual vocabulary fits the problem?
- Do critiques in anthropology, archaeology, art history, and visual culture provide helpful ways forward?
- How can we theorise cultures of seeing and hearing? Can we generalise about them?
- Are there analytical strategies for accessing them in material objects?

[249] Forum · ISSUES IN SUBMERGED PREHISTORIC ARCHAEOLOGY IN THE AMERICAS

Over the past 40 years, archaeologists have conclusively demonstrated the ability to identify and sample archaeological sites of great antiquity that are preserved in submerged contexts. It is no longer a matter of arguing for the potential of submerged sites, or needing to demonstrate the validity of the basic methodologies. While the submerged archaeological record offers unique opportunities for investigating time periods, cultures, and adaptations that are only poorly known on land, underwater research to date has focused on chance discoveries and isolated finds, and rarely produces the systematic coverage of space and material culture that is needed to conduct anthropologically relevant research. Given the growing number of researchers actively engaged in this type of work, questions abound concerning future directions for submerged prehistoric archaeological research. The panelists for this session include academic, regulatory, and CRM professionals, with experience across the Americas. Topics of discussion will include, but are not limited to, how to operationalize regional approaches, the integration of terrestrial and submerged sites research, and the roles of funding and development in underwater research.

[250] Forum · WHO OWNS THE PAST? A DISCUSSION BETWEEN NAT GEO'S DIGGERS AND PROFESSIONAL ARCHAEOLOGISTS

(SPONSORED BY MEDIA RELATIONS COMMITTEE)

This panel will consist of a friendly exchange between the personalities of National Geographic's *Diggers*, their staff archaeologist, and archaeologists from both the academy and cultural resource management firms. The topic of the discussion will be "Who owns the past?" and will focus on how shows like *Diggers*, and other media, can bring together metal detectors and professional archaeologists to preserve the past, and encourage the public to engage with their cultural heritage. Tensions between the television program, other media, and metal detectors in general, and professional archaeologists will be addressed, with an objective of uncovering how the groups can work together in the future.

[251] Symposium - "UNLESS WE REMEMBER WE CANNOT UNDERSTAND": ARCHAEOLOGICAL INQUIRIES INTO THE ACT OF REMEMBERING

This session aims to provide a variety of perspectives on the relationship between archaeological inquiry and memory. Along with asking how the act of archaeological research contributes to memorialization and commemoration, we aim to disentangle definitions of memory for different stakeholder communities by shedding light on various scales of memory (individual, societal, etc.). Further, this session will consider how memory work can shape or challenge current interpretations of the past, and how memory from documents, ethnography, and other sources interlace with archaeological research. What types of memory are typically addressed in archaeology and are certain types privileged over others? This session seeks to examine which people or events get remembered through archaeology, what privileges we take in our memory work, and how, why, and for whom we practice archaeological research.

[252] General Session - SOUTH ASIA**[253] Symposium - ADVENTURES IN ARCHAEOLOGY: A SYMPOSIUM IN HONOR OF WM. JERALD KENNEDY**

For over three decades, Wm. Jerald Kennedy mentored undergraduate and graduate students at Florida Atlantic University. Students interested in archaeology at the growing Boca Raton campus were welcomed by Jerry's affable nature and inquisitive personality. He mastered the art of connecting students with the right projects and field opportunities, often providing subtle direction, sometimes in ways that those students only understood years or decades later. Jerry received his Ph.D. from Tulane in 1968, based on pioneering research conducted in Costa Rica, but his work over the next 40 years reached from Central America to Florida, and from Ireland to Ecuador. He frequently deployed science and technology applications in archaeology, and pioneered the use of GIS in Florida field surveys, along with proton magnetometer remote sensing, PIXE analysis, thin-sectioning, and more. Jerry's work was always student-centered and he encouraged us to follow our interests and passions. Through his example, we learned public archaeology and the value of community-based research. This symposium brings together some of Jerry's colleagues and students who share their research in tribute to their mentor and friend. Jerry was named Professor Emeritus in 2003.

[254] General Session - WORLDWIDE PRESERVATION AND HERITAGE MANAGEMENT: ADVANCES AND CHALLENGES**[255] General Session - PREHISPANIC ANDEAN TECHNOLOGIES****[256] Symposium - UNDERSTANDING CLASSIC MAYA HEGEMONIC NETWORKS THROUGH TEXTUAL-MATERIAL SYNERGIES: THE CASE OF THE "SNAKE" KINGDOM**

Over the past two decades, it has become increasingly clear that the ancient Maya political landscape was permeated by asymmetrical power relations. The hegemonic networks these created fluctuated through time, but the steady presence of a few especially dominant polities shows that they were a persistent feature with very real socio-political effects. Yet, much about these regional systems remains unexplained. Their developmental history, systems of maintenance, coercive mechanisms, degree of cultural assimilation, and impact on their respective patron and client economies are all issues in play. In this symposium, we propose to combine archaeological and epigraphic approaches in order to unravel deeper layers of what are in some cases entrenched, at others ephemeral, connections. Focusing on the impact of the Kaanul "Snake" kingdom seated at Calakmul, Campeche, Mexico, scholars will collaborate to synergize textual and material data from different polities to help define and delineate the nature of the most pervasive and successful hegemonic network of the Late Classic Maya.

[257] General Session - EUROPEAN BRONZE AGE**[258] Symposium - COLLABORATIONS AND COMPETITION BETWEEN PROFESSIONALS AND NONPROFESSIONALS IN THE PRODUCTION OF ARCHAEOLOGICAL KNOWLEDGE IN THE AMERICAS**

(SPONSORED BY HAIG BIENNIAL GORDON R. WILLEY SYMPOSIUM ON THE HISTORY OF ARCHAEOLOGY)

The archaeological record has always intrigued a wide variety of people with different interests, aesthetics, and aspirations, only some of whom became recognized as professionals—and they, too, are a diverse group, as the succession of "new archaeology" movements attests. How Americanist archaeological institutions emerged and grew from the interactions of such "founders," how professional identities were forged—both by excluding and embracing collectors, antiquarians, amateurs, or avocationalists in complex social networks—and how the creation of new knowledge depended on the patterns of those interactions, are intriguing and enduring questions in the history of Americanist archaeology. A Gordon R. Willey symposium focused on the relationships of avocationalists (who lack professional credentials but aspire to contribute comparably to professionals) or amateurs, antiquarians, and collectors (who often had/have their own independent goals) with professionals opens up a wide field of inquiry aimed at better understanding the meaning and means of professionalization and its alternative conceptions, as well as the contingencies

of knowledge production.

[259] Symposium · RETHINKING THE INKA: THE VIEW FROM THE SOUTH

Historically, the majority of archaeological research on Inka provincial rule has been done in the Collasuyu, the quarter of the empire that falls within what is today far southern Peru, Bolivia, Argentina, and Chile. More recently (since 2010, based on Thomson-Reuters Web of Knowledge), there are twice the number of articles on Collasuyu than on the rest of the empire combined. Yet, within the English-language literature on the Inka, this vast body of research (published primarily by Latin American archaeologists in Spanish) is infrequently acknowledged or cited. The findings of recent and long-term projects on the Inka in Collasuyu require us to rethink Inka provincial expansion and administration and the dynamics of Inka-local relations. Papers in this session highlight research on landscape and memory, political economy, ideology and materiality, and identity and authority, and as such contribute not only to Andean studies but to a general understanding of ancient empires.

[260] Symposium · MY BEST (AND WORST) DAY AT FPAN: CELEBRATING 10 YEARS OF FLORIDA PUBLIC ARCHAEOLOGY NETWORK PROGRAM HIGHLIGHTS AND CONTINUING CHALLENGES

The Florida Public Archaeology Network (FPAN) began operations in 2005 and since that time has experienced a range of public archaeology highs and lows. Papers in this session will be delivered by current and past staff asked to consider their best program and greatest challenge. Some of the highlights will include the Submerged Sites Education and Archaeological Stewardship (SSEAS), Cemetery Resource Protection Training (CRPT), Archaeology Works, Teacher in-service, local government assistance, and partnered programs with Florida's Division of Historical Resources. Challenges include assessment, measuring impact, large population centers, rural outreach, turnover rate of partners, and navigating economic trends.

[261] Symposium · WHAT DO WE MEAN BY "DIGITAL CURATION?"

Archaeology is all about information. Increasingly, this information is derived from data that exists in digital formats. Archaeological investigations both create and utilize substantial amounts of digital data. Just as the physical objects recovered from archaeological field studies require proper curation, digital data generated by investigations need to be cared for so they can be accessed and re-studied in the future. The curation of digital archaeological data involves interrelated activities that may occur at different scales, e.g., for individual projects, for a single organization, or in a broadly-utilized repository. The overall goals of digital curation are to maintain, preserve, and add to the value of digital data (e.g., Lord, et al. 2004; Digital Curation Centre 2010; Choudhury et al. 2013). The presentations in this session will address one or more of these goals by describing organizations that provide overall digital curation services and projects that are compiling, publishing, and using digital data in various ways that add to the value of the digital data and related information.

[262] Symposium · COMPARATIVE APPROACHES TO COMPLEXITY IN THE TROPICS

Tropical environments around the world have been the foundation upon which many complex societies have risen, peaked, and ultimately collapsed. Exploring the complexities found within the environment, agricultural strategies, water management practices, urbanism, as well as social and political organizations, provide avenues to understanding why these classical state societies followed similar or divergent trajectories. Over years of discourse, a wealth of information has accumulated on these tropical societies, but only occasionally, have scholars collectively assessed and compared their research questions, methods, and results. This symposium provides an arena to discuss the importance of comparative approaches to understanding the complexities exhibited by tropical societies.

[263] Symposium · MULTIDISCIPLINARY APPROACHES TO AMAZONIAN LANDSCAPES

The symposium will explore the environmental and anthropogenic factors that have created a distinctive Amazonian landscape over the past millennia. Unlike the Andes and Mesoamerica, the Amazon region was long believed to be a pristine land, a place where the environment constrained the formation of complex social formations. However, it is now known that prior to European colonization, larger groups of people with hierarchical socio-political organization and extensive networks of communication inhabited this region. Archaeological and ethnohistorical data demonstrated that the natives in the Amazon actively modified the landscape to meet economic, political, and social needs. Thus, this distinctively anthropogenic landscape provides one of the most important database for understanding routinized social practices and their role in historical transformation. The presentations in this session will discuss theories of landscapes as culturally meaningful places and as products of the interaction between human and non-human entities. Case studies from diverse areas will demonstrate how the study of the Amazon landscape enriched our understanding of past social organization, religious organization, and historical change.

[264] Symposium · INCIDENCIA, ARTICULACIÓN E INNOVACIÓN DEL CONOCIMIENTO ARQUEOLÓGICO EN LA COSTA DEL GOLFO MESOAMERICANO: ORGANIZACIÓN IDEOLÓGICA, POLÍTICA Y RITUAL. / IMPACTS, ARTICULATIONS AND INNOVATIONS IN THE ARCHAEOLOGICAL STUDY OF THE MESOAMERICAN GULF COAST: IDEOLOGICAL, POLITICAL Y RITUAL ORGANIZATION

En este Simposio se establecerá un diálogo entre especialistas de sociedades prehispánicas de la Costa del Golfo Mesoamericano. El objetivo es evaluar la incidencia y articulación del conocimiento arqueológico e iconográfico que se tiene actualmente en la región. Esta sesión (1) está enfocada principalmente en la revisión de elementos ideológicos, políticos y rituales que constituyeron los fundamentos de organización social de los habitantes de algunos sitios prehispánicos de la Costa del Golfo.

In this symposium, we are establishing a dialog between specialists in the prehispanic societies of the Mesoamerican Gulf Coast. The goal is to evaluate the impacts and articulation of archaeological and iconographical knowledge that exists for the region. This session (1) is focused primarily on the review of ideological, political, and ritual components that constructed the foundations of social organization of the inhabitants of various prehispanic settlements in the Gulf Coast.

[265] Poster Session • MUSEUM MEET AND GREET*(SPONSORED BY THE COMMITTEE ON MUSEUMS, COLLECTIONS, AND CURATION)*

Many museums' and repositories' archaeological collections are filled to the brim with artifacts. These collections offer countless research projects that are all too often under-utilized. This poster session offers archaeologists an opportunity to get to know what types of collections museums and repositories have to offer and how they can go about accessing these collections for research. Come learn about aspects of collections that are under researched and be inspired to start a research project. Become informed about the current projects underway at various institutions that involve community outreach and collaborative projects with Native groups, and how you can assist with these efforts. This session will also allow for inquiries about what archaeologists can do to improve the documentation of collections from the initial repository process all the way through to long term curation and future research.

[266] Poster Session • NAGPRA AND BEYOND: SUCCESSES AND SHARED BENEFITS OF COLLABORATION*(SPONSORED BY INDIGENOUS POPULATIONS INTEREST GROUP)*

This invited poster symposium will serve as a venue to continue building on the dialogue concerning the implementation of NAGPRA, collaboration and its many shared benefits, and the history of NAGPRA and laws leading up to its passage. Participants will present a wide variety of case studies from across the U.S. and represent the successes that have come from collaboration among Native American communities, museums, colleges/universities, archaeologists, and other stakeholders. Presentations will focus on the relationships that were built as a result of required consultations and repatriation events, but will also focus on collaborations and relationships that existed before the passage of NAGPRA and the laws that set precedence for national legislation. Poster topics will also extend beyond the scope of NAGPRA to highlight the successes of public education and outreach events and instances where upcoming generations have been educated about the importance of maintaining the ties that have been made or strengthened in the process.

[267] Poster Session • CELEBRATING THE CONTRIBUTIONS OF A COMMUNITY OF PRESERVATION: FOREST SERVICE PARTNERS AND VOLUNTEERS*(SPONSORED BY USDA FOREST SERVICE)*

National forests contain special places of historic and cultural importance to local communities, Native American tribes, and humanity. We rely on partners and volunteers to help us be stewards of these special places. This year we are honoring the 50th anniversary of the National Historic Preservation Act (NHPA). The NHPA helps us maintain our connection to the land learning more about our past while managing for use into the future. This symposium will celebrate the research, interpretive programs, and stewardship efforts developed by the Forest Service together with partners and volunteers. These programs help unite a diverse community, including academics and interested citizens, towards common goals which further understanding, preservation, protection, access, and appreciation of our cultural resources.

[268] Poster Session • RECENT ARCHAEOLOGICAL RESEARCH IN PETRIFIED FOREST NATIONAL PARK

Petrified Forest National Park has been the subject of archaeological research for well over 100 years. In 2004, Congress authorized a boundary expansion, effectively doubling the protected land in Petrified Forest National Park. As these lands are slowly being purchased and added to the park, a three-year project began in 2013 to inventory cultural resources. This session presents the preliminary results of the survey project which have recorded a stunning density and diversity of archaeological remains. Archaeological sites spanning the last 10,000 years of human occupation have been identified and recorded, including most notably extensive preceramic sites and lithic landscapes, large Basketmaker villages, and a densely settled Puebloan landscape. The National Park Service has taken this opportunity to use the boundary expansion project as a teaching laboratory and platform for future investigation, incorporating student interns and researchers into the project. This session presents an update of the recent archaeology completed in Petrified Forest, and highlights some of the independent student research projects.

[269] General Session • CURRENT RESEARCH IN SOUTHERN AND EASTERN AFRICA**[270] General Session • SUBSISTENCE AND AGRICULTURAL STRATEGIES IN MESOAMERICA****[271] General Session • GREEK AND ROMAN ARCHAEOLOGY****[272] Electronic Symposium • EVOLUTIONARY ARCHAEOLOGIES: NEW APPROACHES, METHODS, AND EMPIRICAL SUFFICIENCY**

Over the past decade, methodological advances and the expansion of the application of evolutionary frameworks have led to critical insights into a host of anthropological and archaeological problems. Enduring topics in evolutionary archaeology such as cultural transmission and population dynamics are benefiting from these new methodologies. Concurrently, expanding evolutionary models seek to explain specific human interactions and historic processes through the study of material culture. The papers in this symposium display the breadth of current archaeological research that engages with a range of evolutionary models, from the influence of cognitive biases in social learning and the impacts of population dynamics on cultural diversity to how optimal foraging and signaling models can help archaeologists tease apart the historical dynamics behind social practices. Our papers demonstrate how different evolutionary models are aiding archaeologists in teasing apart the dynamics behind

assemblages in diverse contexts, ranging from the Classic Maya to enslaved plantation workers.

[273] General Session · MAYAN ARCHAEOLOGY

[274] General Session · PALEOINDIAN SETTLEMENT AND PORTABLE ART

[275] Symposium · CURRENT BIOARCHAEOLOGICAL RESEARCH IN THE CASAS GRANDES REGION

Bioarchaeological research has played an important role in archaeological investigations of the Casas Grandes region, including interpretations of population growth, long-distance social interaction, and patterns of violence and sacrifices. There has been a steady increase of bioarchaeological analyses over the past several years that have built upon initial studies. The goal of this session is to provide a synthesis of current studies utilizing the large skeletal assemblage recovered from Paquimé, Convento, and surrounding sites. While the participants employ a range of bioarchaeological techniques, including genetic, isotopic, osteological, and paleobotanical analyses, their research converges on key issues in southwest/northwest prehistory, namely migration, subsistence, and social organization. By exploring population interaction and changes in subsistence practices over time, the results of these analyses can contribute significantly to the ongoing debate concerning the development of Medio period complexity, as well as the eventual collapse of Paquimé.

[276] General Session · BIOANTHROPOLOGICAL STUDIES IN SOUTH AMERICA

[277] General Session · HUMAN-COASTAL INTERACTIONS IN THE PAST

[278] General Session · EUROPEAN PALEOLITHIC AGE

[279] General Session · ARCHAEOLOGY OF NORTHERN SOUTH AMERICA: ECUADOR, COLOMBIA AND VENEZUELA

[280] General Session · ARCHAEOLOGY OF THE CAROLINAS

[281] General Session · COLONIAL ARCHAEOLOGY IN THE ANDES

[282] Symposium · MORE THAN A LABEL: SOCIAL COMPLEXITY, VARIABILITY AND SOCIAL DIVERSITY IN THE ORINOCO AND AMAZON BASINS

The variability of the social organization of precolumbian and colonial societies constitutes one of the most critical aspects to the archaeological debate in the Orinoco and Amazon basins. Since the seminal works of Lathrap, Meggers, Roosevelt, and Whitehead, the question about the nature of the sociopolitical, leadership on the societies from both the Orinoquian and Amazonia has been at the core of the archaeological and ethnohistorical research. The study of agricultural production, settlement patterns, and exchange among others, resulted central to understand the great diversity of social organization of the human groups in this area. This session proposes the discussion about the social political dynamics of the societies from the Orinoco and Amazon Basin. An important focus of the session's discussion will rest on the methodological issues as well as the critics on the use of concepts as such as chiefdom, chiefs, chieftancy, and complex societies to understand the area's cultural development.

[283] Symposium · CONSUMPTION PATTERNS AND FUNERARY RITUALS AT THE SITE OF PANQUILMA, LURIN VALLEY, PERUVIAN CENTRAL COAST

(SPONSORED BY INSTITUTO DE ESTUDIOS PERUANOS)

According to ethnohistoric sources, during the Late Intermediate and Late Horizon periods, social landscape in the Lurin Valley was dominated by the coastal religious center of Pachacamac. This session will discuss the role of Panquilma, a rural community located 20 km up valley from Pachacamac, in the social organization of the Lurin Valley during these periods. Special emphasis will be placed in addressing the nature of the relationship between Panquilma and the religious center. To this end, papers in this session will present the results of the analyses of different types of materials such as botanic remains, animal bones, ceramics, and textiles, excavated during the 2015 field season at the site. Based on this information, we will propose the existence of well-defined intra site consumption patterns and activities, including the profuse performance of funerary rituals.

[284] General Session · HISTORICAL ARCHAEOLOGY OF THE MID-ATLANTIC

[285] General Session · EASTERN WOODLANDS

[286] General Session · EASTERN US BIOARCHAEOLOGY**[287] General Session · PUBLIC ARCHAEOLOGY****[288] Symposium · EXPLORING TWO THOUSAND YEARS OF HUMAN HABITATION IN THE BELIZE VALLEY: SITUATING CAHAL PECH IN LOWLAND MAYA PREHISTORY**

The Belize Valley has traditionally been considered a peripheral region of the southern Maya Lowlands. Twenty-eight years of research by the Belize Valley Archaeological Reconnaissance project at Cahal Pech have, however, demonstrated that the medium-sized polities of the Belize Valley actively participated in the socioeconomic and political processes that unfolded in the central Maya Lowlands. Research in the Belize Valley has also provided critical information for understanding the rise of cultural complexity in the Middle Preclassic Period, and the subsequent growth, fluorescence, and decline of Classic Period Maya civilization in this sub-region of the Maya Lowlands. Besides elucidating 2,000 years (ca. 1100/1000 B.C.–A.D. 1000) of prehistory at this major Belize Valley site, this session will also serve to demonstrate that Cahal Pech, and other Belize Valley sites were important participants in the events occurring in the Maya world from the Middle Preclassic to the Terminal Classic periods. It is expected that participants of the session employ a broad range of methodologies (e.g., settlement patterns, architectural analysis, mortuary analysis, ceramic studies, etc.) to accomplish the purpose of the session.

[289] General Session · CONNECTIONS IN THE AMERICAN SOUTHWEST**[290] Symposium · THE ARCHAEOLOGY, ART, AND ICONOGRAPHY OF FLORIDA'S WATERY LANDSCAPES**

(SPONSORED BY TOOMEY FOUNDATION)

Frank Hamilton Cushing's 1896 excavations at Key Marco revealed astonishing carved and painted objects of wood rarely seen by archaeologists. Those following in Cushing's footsteps have assembled a corpus of aesthetic objects from Florida, often in perishable materials. These range from an embarrassing number of dugout canoes, to the elaborate paddle-stamped pottery of Swift Creek, and from the wooden animal carvings of Fort Center's mortuary pond to the owl totem of Hontoon Island. Connections to neighboring areas have been sought with some success; in general, however, the diversity of imagery often makes comparison a challenge. The papers in this symposium explore new discoveries and revisit existing museum collections, asking new questions or employing innovative analytical techniques. Cushing concluded his slim Key Marco report with the surmise that the boundless life of the sea provided the energetic impulse behind the artworks that he uncovered. While we might reach a different conclusion today, it's clear that ancient Florida is difficult to comfortably place within the southeast or Caribbean and that much of that difficulty arises from the iconography born of Florida's watery landscapes.

[291] Symposium · PRECLASSIC TO COLONIAL: CURRENT INVESTIGATIONS IN THE PETÉN LAKES REGION, GUATEMALA

This session focuses on current archaeological research performed in the Petén lakes region, Guatemala. Speakers will present results from excavations and/or laboratory analyses from several Maya centers dating to different temporal periods from the Preclassic to Colonial Period. Recent research has highlighted the diversity of occupation in the region, and papers include in-depth discussions of ceramic, mortuary, and lithic analysis. The objective of this session is to facilitate information exchange among scholars in order to obtain a broader regional perspective on the cultural continuity and change in this area.

[292] Symposium · RECENT APPLICATIONS OF LUMINESCENCE DATING IN ARCHAEOLOGY

Luminescence dating is a well-established dating technique applicable to materials exposed to either heat or light in the past, including ceramics, fired lithics, and sediments. One advantage of luminescence dating, especially for ceramics, is that it directly dates the manufacture or last use of the pottery, rather than inferring a date from association of pottery with 14C-dated organic materials. In the past two decades, the application of luminescence dating has gradually increased in archaeological studies in the U.S. Several studies using luminescence dating for ceramics and sediments have been published recently. Recognizing that luminescence dating may now be "coming of age" in archaeology, we present in this session several recent applications of luminescence dating in archaeology. The papers include studies from the American southwest, Central and South America, Mexico and eastern and mid-continental United States. The goal of the session is to illustrate some of the potential of luminescence dating to answer research questions in archaeology.

[293] Symposium · BEYOND THE ETHNICITY DEBATE: EXAMINING THE MANY CONTEXTS OF COLONOWARE

Colonoware refers to handbuilt, low-fired earthenware likely produced by both Native Americans and enslaved Africans between the mid-seventeenth to the mid-nineteenth centuries in the United States. Traditionally, researchers have debated the ethnicity of colono producers by formulating arguments around specific vessel attributes that might be considered "Native American" or "African." While these debates provide important insights, a focus on ethnicity obscures research avenues that can address critical questions about social and economic networks. The papers in this session move beyond the ethnicity debate to interrogate colonoware and its contexts, using attribute-based analyses and incorporating new analytical techniques, such as Geographic Information Systems and compositional analysis. The papers examine colonoware from a variety of perspectives to explore processes such as production, use, exchange, and interaction, and the ware's role in local and regional economies. The studies cover a wide geographic distribution and demonstrate that this pottery tradition—while exhibiting general similarities in material traits—is also highly variable and based on the particular social and economic contexts of its users and producers.

[294] Symposium · NEW DEVELOPMENTS IN MESOAMERICAN SUBTERRANEAN ARCHAEOLOGY

Subterranean archaeology is an outgrowth of Mesoamerican cave archaeology, as the latter has encountered new features, often human constructions, which fall outside of what are normally considered to be caves. The features require the specialized field methodologies first developed by cave archaeology and, thus far, all are considered landmarks in the ancient sacred landscape. As such, their importance derives from their association with the Maya concept of a sacred animate earth. The shift to the term subterranean archaeology serves to emphasize that a great deal more appears to have been occurring below the ground level in ancient times than archaeologists have heretofore appreciated. The expansion of the discipline's field of vision is in its infancy so it is expected the types of subterranean features will continue to multiply in the future.

[295] Symposium · FORESTS OF PLENTY: ETHNOGRAPHIC AND ARCHAEOLOGICAL RAINFORESTS AS HOTSPOTS OF HUMAN ACTIVITY

In popular discourse, rainforests are synonymous with 'nature' and 'wilderness,' battlegrounds between apparently pristine floral, faunal, and human communities, and the unrelenting industrial and urban powers of the modern world. Indeed, in the 1980s, anthropologists and human ecologists argued that tropical rainforests were unattractive environments for long-term human navigation, subsistence, and occupation. However, archaeological and anthropological research over the last two decades has increasingly demonstrated that the tropical rainforests of the Americas, Africa, and Asia have been persistent 'hotspots' of human subsistence and activity across prehistoric, historical, and ethnographic periods. This symposium aims to connect and compare the regional and temporal diversity of these rainforest ecologies, and their associated records of human occupation, in order to understand their desirability for our species and its close relatives. In doing so, this symposium explores the developing methodologies that are increasing the resolution with which we can study human rainforest demographies, adaptations, and practices, as well as the ecological resilience of different rainforest habitats to both anthropogenic and climatic pressures.

[296] Symposium · MODEL ENVIRONMENTS: HUMAN ECODYNAMICS ON ISLANDS

(SPONSORED BY THE JOURNAL OF ISLAND AND COASTAL ARCHAEOLOGY)

Although island archaeology has moved beyond the simplistic "islands as laboratories" view, islands continue to be used as models for coupled human and natural systems, or human ecodynamics. Island environments have the potential to serve as useful case studies for a range of important topics in world prehistory, especially when approached comparatively. This session will address a range of issues implied by human ecodynamics on islands, such as historical ecology, migration and interaction, subsistence change, conflict and territoriality, impacts on native biota, monumentality, and sociocultural evolution. Papers will address theoretical and substantive topics from islands and archipelagos across the globe. Those taking a comparative approach are especially welcome.

THE ANNUAL MEETING of the Society for American Archaeology provides a forum for the dissemination of knowledge and discussion. The views expressed at the sessions are solely those of the speakers and the Society does not endorse, approve, or censor them. Descriptions of events and titles are those of the organizers, not the Society.

ABSTRACTS OF INDIVIDUAL PRESENTATIONS

A Lazagabaster, Ignacio [207] see Wilkin, Shevan

Abbott, David [289] see Schwartz, Christopher

Abell, Natalie and Myrto Georgakopoulou (University College London, Qatar)

[257] *Re-casting from Scrap: The Role of Ayia Irini in Bronze Age Aegean Metallurgy*

Metallurgy is considered key in understanding the prominence of Ayia Irini during the Bronze Age in the Aegean Sea. Over the course of the Bronze Age, metal production and circulation flourish, with Attica and the western Cyclades considered primary ore sources, with their importance fluctuating within this period. The role of Ayia Irini, located in the center of this metal-bearing zone and with extensive evidence for local metallurgical activities, remains to be clarified. A new project by the authors constitutes the first systematic analysis of the extensive collection of metal and metallurgical finds from Ayia Irini, excavated in the late 1960s and 1970s. The methodology involves archival research, macroscopic examination of all finds including fabric categorization of metallurgical ceramics, and non-invasive portable XRF analysis of metallic artifacts. Our research has so far identified over 1,000 objects, spanning all Bronze Age periods of occupation, as well as subsequent historical periods. This paper summarizes the emerging picture with regards to spatial and chronological distribution of Bronze Age metal and metallurgical finds at Ayia Irini. It discusses changing patterns of metal procurement, working, and consumption across the site and considers typological and technological changes over time.

Abeyta, Armando [245] see Burnett, Katherine

Abrams, Elliot (OHIO University)

[119] *Discussant*

Abtosway, Matthew

[234] *Monuments Unmasked*

Ometepe Island, Zapatera Island and Las Isletas of Lake Nicaragua are home to a distinctive group of monumental ground stone statues of up to two meters in height. Sometimes referred to as the "Alter-Ego" style, they depict humans with full animals on their back and shoulders, or elaborate headdresses with animalistic imagery. Well known throughout the country, they are featured prominently in murals and even currency. Yet their purpose and symbolism remains poorly understood due to challenges in dating production (estimates range between 300-1520 AD), but also difficulty in recovering original details following centuries of physical and chemical weathering. Using photogrammetry, high resolution three dimensional models of many of these statues were produced from thousands of photos collected over several years. These models offered the ability to look past the stained coloring and now seemingly irregular surface revealing surprising new details. Decorative elements that are absent from artists' depictions and aren't apparent through visual examination became discernable using these methods. Beyond a simple demonstration of photogrammetry's applicability, it is hoped that this method will inform iconographic comparisons with ceramics and statuary from other regions of Nicaragua and Costa Rica.

Acabado, Stephen [262] see Yakal, Madeleine

Acebo, Nathan (Stanford University)

[128] *Palimpsests in the Colonial Borderland at Black Star Canyon, Orange County, California*

The Santa Ana mountain landscape of contemporary Orange County, CA has been dichotomously characterized as "a wild colonial borderland" and "a prehistoric indigenous space" where the material and social histories of indigenous communities are ossified while legacies of Spanish, Mexican, and American colonial society are both solidified and continued. Within this landscape, the Black Star Canyon village (CA-ORA-132) objectifies this historical disjunction in that the site constitutes a multi-component prehistoric/historic period site that was associated with the local history of the "Battle of Black Star Canyon," in which recalcitrant Indians were accused of stealing horses and were subsequently killed in 1831 by American fur trappers. This paper seeks to complicate the disunion the modern characterizations of the archaeological landscape highlighted above by exploring how prehistoric and colonial era materialities of the mountain contributed to local and non-local indigenous practices of social and economic subversion in conjunction with the formulation of citizenship and violence through time.

Acevedo, Veronica (Licenciada Veronica J. Acevedo)

[204] *Combined use of Different Lines of Evidence for the Analysis of Polychrome Archaeological Ceramics of the Quebrada de Humahuaca, Jujuy, Argentina*

Polychrome archaeological ceramics called "vírgulas or comas" hold a comprehensive but an unequal space distribution. They are found in limited quantities in archaeological sites in regions as North and Central Puna, Quebrada de Humahuaca, Jujuy and Northeast areas of Argentina. These ceramics vessels had been used in both regions since 900 AD until the Spanish post-colony. Then, we come to the conclusion about the movement of these ceramics pieces with a significant use and a ritual or ceremonial consumption between borders. Thus, the combined use of different lines of evidence such as actualistic studies and archaeometric techniques—paste analysis, ceramics petrography, Raman spectroscopy, and alike—have been enlightening to classify shards and ceramics. In this current work and on-going research, technological and stylistic aspects have been considered to be analysed throughout diverse lines of evidence which have let us stand closer to a possible identification of traditional workmanship that might have stemmed from a passive expression of identity and so, have intended to communicate it. It was considered depicted shapes and sizes, particular surface finishes, design

elements represented by some of these fragments (vitrification, recoating, use of hydroxyapatite), similarities in pastes with non-plastic white inclusions and petrographic differences, among others.

Ackerly, Neal (Dos Rios Consultants, Inc.)

[168] *Prehistoric Land Use in the Southern Tularosa Basin, New Mexico*

Systematic archaeological survey of more than 100,000 acres in the southern Tularosa Basin of New Mexico has resulted in the discovery of almost 600 prehistoric sites and upwards of 65,000 isolated occurrences. These data, combined with highly detailed information regarding environmental characteristics of the study area, allow time-sequential reconstructions of land-use patterns over thousands of years. To anticipate more detailed discussions, there is evidence for long-term central places that structured past land use in the southern Tularosa Basin.

Acosta, Jocelyn [93] see Copeland, Lauren

Acosta Ochoa, Guillermo [55] see Lohse, Jon

Acuff, Alana (College of Charleston), Jaime Ullinger (Quinnipiac University) and László Paja (University of Szeged)

[149] *Analysis of Possible Anatomical Order in Microexcavated Bronze Age Funerary Urn Material from Hungary*

On-going excavations conducted by the BAKOTA project at the Bronze Age cemetery of Békés 103 in eastern Hungary have uncovered 69 human burials, the majority of which are cremated skeletal remains deposited in ceramic urns. Cremains are an often-overlooked archaeological resource as information regarding age at death, sex, and pathologies can be more difficult to assess after a body has been burned. While demographic information may be limited in this context, the stratigraphic distribution of bones within their burial contexts may inform us about the treatment of the deceased and their deposition in the archaeological record. This study sought to identify patterns of anatomical variation internal to discrete microstrata of one urn, Human Burial 54. Based on a preliminary analysis (Paja et al. 2014), we hypothesized that there would be a concentration of cranial elements within upper levels of the urn, whereas postcranial elements would be concentrated within lower levels. Bone fragments were evaluated by size, shape, and internal organization to determine anatomical association and statistics were generated for each level. Our results substantiate our hypothesis, with the ratio of cranial to postcranial elements decreasing in direct correlation with the microstratigraphic levels.

Acuna, Mary Jane [138] see Freidel, David

Adams, Chris [78] see Laluk, Nicholas

Adcock, Sarah E. (University of Chicago)

[74] *Exploring the Collapse of the Hittite Empire as a Social Phenomenon*

In this paper, I explore how viewing collapse as a social and political phenomenon might change how we interpret the collapse of the Hittite empire in Turkey at the end of the Late Bronze Age (ca. 1200 BC). To this end, I consider the implications of changes and continuities in animal management at two sites in central Turkey following the collapse of the Hittite empire. The end of the Late Bronze Age was characterized by significant political and economic disruption throughout the eastern Mediterranean, and the subsequent period has often been understood as a 'Dark Age.' Here I present the results of new faunal analyses from the Hittite capital of Hattuşa and from Çadır Höyük, a rural town, monitoring the faunal evidence for changes and continuities in the organization of practices related to the production, processing, and distribution of both antemortem and postmortem animal resources. By studying how people used animals and their products at these two very different sites, I look for potential shifts in social practices across the Late Bronze-Early Iron Age transition, and I consider how the Hittite collapse may have been experienced differently by people living in different parts of the empire.

[74] *Chair*

Adderley, Paul (University of Stirling), James Woollett (Université Laval), Guðrún Gísladóttir (Fornleifastofnunar Íslands (Institute of Archaeology) and Uggi Ævarsson (Minjastofnun Íslands (The Cultural Heritage Agency)

[95] *Increasing the Resolution from Climate Change to Weather Events: Understanding Past Land-use Management on the Svalbarð Estate, North East Iceland*

Climate change has commonly been invoked as the most major force in determining land-use in the Norse settlement of Iceland. Recently, climate studies in the North Atlantic have focused on regional-scale shifts in temperature, ice-cover, and storminess. In contrast, the post-settlement period is increasingly understood from excavation and analyses of the material culture associated with farming practices, as well as literature-based and geomorphological perspectives. While climate evidence provided by regional proxies such as ice-core data interpretation is increasingly and readily available, the linkage from these data to patterns of landscape use and management remains largely speculative. Furthermore, there is an obvious contention when considering the direct impact of climate change on landscape productivities, relative to the ability for past farming communities to adapt. In this paper we examine the results of a project being conducted across a set of farm-sites on the Svalbarð estate, north east Iceland. Examining both major farmsteads and those in the hinterland, novel high-resolution instrumented analysis of above- and below-ground temperature and moisture conditions is scaled relative to regional data. This enables us to model landscape productivities available to past farmers and, augmented by archaeological survey and excavation, to consider detailed scenarios of past land-use.

Adler, Michael (Southern Methodist University)

[43] *Destruction of Stored Food in Pre-Contact Northern Rio Grande Pueblo Communities: Food for Thought*

Past archaeological interpretations of site destruction and the elimination of associated food resources, namely through burning, focus largely on conflict-based models of village warfare. This paper considers the role that food-related issues, particularly food-related toxins, might also have played in the destruction of food resources and relocation of village populations during the late pre-contact (AD 1200-1540) period in the Northern Rio Grande region.

Adler, Rachel (MS, Architectural Conservator, Los Alamos, NM, USA), Barbara Judy (National Park Service), Sarah Stokely (MSc, Architectural Conservator, Washington, D.C.,) and Rory Gauthier (National Park Service (Retired))

[210] *Climate Change Challenges at Bandelier National Monument: Adapting Conservation and Monitoring Responses for Cultural Sites in the Desert Southwest*

The Ancestral Puebloan sites at Bandelier National Monument include both masonry pueblos and man-made cave sites. The dry climate of northern New Mexico in conjunction with the environmental awareness and architectural ingenuity of the builders have played an important role in the preservation of these sites, which continue to yield valuable archaeological information. Changes in the semi-arid climate in which the monument is located have begun to threaten the equilibrium between these archaeological sites and their setting. Large-scale wildfires exacerbated by regional drying trends, and a lengthened monsoon season characterized by an increase in storm severity, are examples of circumstances potentially tied to climate change that call for a new approach to site preservation. This paper looks at how cultural resources programs at Bandelier managed two groups of sites in response to the effects of climate change. One group has undergone several years of documentation, as well as treatment to protect it from erosion effects of a major wildfire that took place in 2011. The other group is the subject of a proposed monitoring program to determine if natural environmental processes, visitor access, climate change, or a combination of these are contributing to the deterioration of these resources.

Adovasio, J.M. [63] see McBrinn, Maxine

Adovasio, J. M. (Mercyhurst Archaeological Institute MAI), Tom Dillehay (Vanderbilt University, Nashville, TN) and J. S. Illingworth (Mercyhurst Archaeological Institute, Mercyhurst Un)

[69] *Another F-----g Basket Baper: Decorated Specimens from Huaca Prieta, Peru*

Recent analysis of the basketry assemblage derived from the re-excavation of Huaca Prieta, Peru indicate the production of several highly complex "wall" types concurrently with escalating cultural complexity at this unique coastal site. These basketry variations include two expressions of twining which are presently unparalleled in South America. Both types also exhibit blue dyed elements and appear to have been intentionally dismembered before deposition. The technical attributes, chronological placement, and depositional context of these specimens are described and an assessment of their potential role(s) in the genesis and subsequent evolution of cultural complexity in this portion of South America is offered.

Aebersold, Luisa (University of Texas at Austin)

[130] *The Blue Creek Rejollada Revisited: Transitional Imprints on Sedimentological Records*

Early to mid-Holocene humans domesticated a wide variety of plants and animals, which widely changed societies and environments around the world. The Archaic period in the Maya Lowlands was suited for this transition from hunting and gathering to agriculture with its abundant resources such as edible wild plants and animals, fertile soils, and abundant freshwater. To better understand long-term societal and environmental changes by early inhabitants, we studied sedimentation and paleosols in a collapsed doline, called a rejollada, and a soil toposequence over the 200 m slope profile to the ancient Maya site of Blue Creek, Belize. Blue Creek had a known occupation from the Middle Preclassic, about 2500 B.P., through the Late Classic, about 1100 B.P. We will present a chronology of the site's human activities, as well as dated paleosol and sedimentation rates based on 2003 and 2015 excavations to a depth of 5 m. We will also present findings from a series of paleosols, between 3.5 and 2.9 m, and their associated stone tools dated to the Archaic period (3900 to 4300 BP) based on AMS dating, chemical and texture analysis, and Pb 210 dating.

[130] *Chair*

Ævarsson, Uggi [95] see Adderley, Paul

Afshari, Sebastian [20] see Vaughan, Andrew

Agolli, Esmeralda (University of Tirana)

[188] *The Use of Space: Settlement Pattern during the Late Prehistory in the Lake of Small Prespa (Southeast Albania)*

The question of settlement pattern during the Late Prehistory (Late Bronze and Early Iron Age 1300–900 B.C.) in Albania comprises an unresolved topic constantly discussed over during the last few decades. The high presence of the tumuli mounds and the lack of the contemporary data from a settlement context complicated increasingly the understanding of the way these communities conceptualized their space and exploited the environment. However, recent excavation campaigns in the cave of Tren and the hill above it, and some additional data recorded from latter surveys around the lake of Small Prespa and the adjacent valley of river Devoll offer some invaluable insights regarding the settlement pattern. The paper argues that during the Late Prehistory in this area the location in one settlement is not at all practiced. On contrary, the Late Prehistoric communities largely conditioned by the environmental factors, demographics, natural defense, and social organization chose to live at various small and convenient dwelling spots close and around the lake.

Agüero, Carolina [76] see Santana Sagredo, Francisca

Aguilar Pérez, María Antonia (Arqueóloga)

[216] *¿Y antes de la playa de Vicente?: Cronología de sitios prehispánicos en el Tesechoacán*

El municipio veracruzano de Playa Vicente es fundado oficialmente en 1873 a partir de un caserío que se desarrolló alrededor de una playa formada a orillas del río Tesechoacán, el asentamiento es producto de la ruta que seguían los comerciantes de madera que bajaban de la sierra de Oaxaca hacia las costas veracruzanas. Sin embargo antes de que se establecieran allí los nuevos lugareños el área estuvo habitada tiempo atrás, pero de aquellos pobladores poco se ha sabido. En la última década se han localizado sitios arqueológicos que dan cuenta de los antiguos centros de población prehispánica que se desarrollaron en esa zona y que algunos autores han llamado "zona de confluencia" por su situación geográfica entre los llanos y la sierra, sitios que presentan cronologías diversas y que dan cuenta del pasado de "la playa de Vicente."

Aguirre-Samudio, Ana (Universidad Nacional Autonoma de Mexico), Blanca González-Sobrinó (Universidad Nacional Autonoma de Mexico), Rafael Montiel (Laboratorio Nacional de Genómica para la Biodivers), Brenda Álvarez-Sandoval (Laboratorio Nacional de Genómica para la

Biodivers) and Abigail Meza-Peñaloza (Universidad Nacional Autonoma de Mexico)**[236]** *Ancient DNA in Archaeological Bone Tools from La Ventilla, Teotihuacan: Sex Determination and Genetic Structure*

La Ventilla is a household from Teotihuacan, a great city whose people lived during the Classic Period (1-700 A.C) reaching a vast demographic growth. Farmers and merchants were residents of La Ventilla. Archaeological evidence has shown commercial, political, and service interchanges with Teotihuacan spreading to all of Mexico. We analyzed population diversity and genetic distance between La Ventilla and 11 ancient groups from Mexico. Materials from a bone tools set were processed yielding ancient DNA; the protocol was made under rigorous methodology preventing contamination. The results were verified in other ancient DNA laboratory. Sex determination with amelogenin gene was compared with tool type and American mitochondrial variation. Sample consisted in 45 percent males and 55 percent females with haplogroups A (58 percent), B (16 percent), C (21 percent) and D (5 percent). A suite of cluster analysis, genetic distance, and a population movement estimation showed demographic connections between La Ventilla and groups from the center and south of Mexico. Discriminant analysis had two population agglomerative hierarchical clustering. We found genetic structure of 19.68 percent ($p < 0.01$). We inferred a population dynamic may respond to gene flow and movement among La Ventilla and other places from Mexico. These processes contributed to changes in the structure of the inhabitants of Mesoamerica.

Ahlman, Todd (Texas State University)**[126]** *The Historic House Yard Landscapes of St. Kitts' Southeast Peninsula Plantations*

Like most of the Leeward Islands, St. Kitts' historic economy was powered by sugar cultivation. Enslaved Africans and ultimately freedmen were the labor source in the sugar fields and from the late seventeenth century onward enslaved Africans outnumbered Europeans 15 to 1. By the early nineteenth century there were over 100 known slave villages across the island. Using data from three investigated plantation sites from St. Kitts' southeast peninsula, the spatial arrangement of the enslaved African villages and house yards are compared. At a macroscale, enslaved Africans took advantage of and manipulated the natural landscape in each village's spatial arrangement. A close examination of one village shows how enslaved Africans organized their activity areas to shield themselves from the overseer as well as other village members. Diachronic changes and intra-village differences in housing types are also explored.

Ahlrichs, Robert (UW-Milwaukee)**[285]** *Differential Use of Copper in Northern and Southern Wisconsin Societies*

Avocational collectors in Wisconsin have collected thousands of copper artifacts over the last century and half. This copper has gone largely unexamined by the professional archaeological community. The archaeological literature is therefore silent on basic facts such as size ranges and changes in use of the raw material from society to society. Copper entered the economic systems of these Archaic Wisconsin societies as an innovative, but ultimately redundant raw material given the existence of bone and stone artifacts of apparently equivalent use-value. It is expected that copper as a raw material fundamentally changed the cultural systems of its adoptive societies and that its use will vary relative to its accessibility. This study reports in-progress results from a large copper collection from both Lake Koshkonong in southeast Wisconsin and the Lake Nokomis and Pembine areas in northern Wisconsin. The use of copper as a raw material will be compared between northern and southern Wisconsin locales using metric, morphological, and use wear data from the three source areas.

[285] *Chair*

Ajithprasad, P. [134] see Brad, Chase

Akemann, Kevin**[244]** *An Intrasite Analysis of Faunal Remains at the Bell Site (47-Wn-9)*

GIS is being used increasingly in archaeology today, but can also enhance the understanding—through intrasite analysis—of sites excavated before GIS became popular. The Bell site (47-Wn-9), in Winnebago County, Wisconsin, is one such site. The faunal remains collected there represent two short, distinct occupation periods and distinct cultural traditions. An analysis of the quantity, artifact associations, and provenience of faunal remains recovered can add to the established understanding of the site's utilization, and point the way to areas where further analysis can be conducted.

Akgül, Gülfirde [103] see Viganò, Claudia

Akmenkalns, Jessika (University of California, Santa Barbara)**[224]** *Understanding Sociopolitical Change through Ceramic Morphological Diversity in the Ancient Nubian Hinterlands*

Ceramics have played a central role in archaeological studies of ancient Nubia. They have been used to refine the regional chronology and to enhance our understanding of social, political, and economic processes. While many such studies have focused primarily on large, centralized polities, fewer attempts have been made to investigate how hinterland communities engaged with changing life ways throughout the region's long cultural history. This paper examines a collection of ceramic samples taken from sites in the Upper Nubian hinterland during the UCLA Dongola Reach Expedition conducted in 1997 and 1998 and investigates how ceramic repertoires changed alongside shifting sociopolitical and environmental conditions from the Neolithic through the Islamic period. I employ diversity analysis to examine diachronic changes in ceramic morphological diversity across the sites sampled. The evidence suggests a trend of group conformity, cooperation, and inclusivity across neighboring communities in the Neolithic, Pre-Kerma, and Kerma periods, which I take to indicate the presence of a shared regional habitus. This was followed by heightened exclusivity and variation concomitant with the changing social organization that characterized the New Kingdom through the Islamic period, which I argue indicates the creation of unique, highly localized community identities.

Akoshima, Kaoru (Tohoku University)**[170]** *Late Wurm Adaptive Systems in Tohoku Japan: Viewed from Lithic Use-Wear Analysis*

The paper investigates lithic use-wear data from the viewpoint of human mobility patterns and functional inter-site variability. Microwear analysis based on controlled experiments was initiated in 1970s in Japan, and the method combined both a high power and low power (that is, high magnification and low magnification) approach. Since then accumulated case studies focused on the Upper Paleolithic period of Northeastern Honshu Island of Japan (Tohoku District). Chronological sequences and characteristic site structure, and analyses of spatial distributions in conjunction with functional identification of

formal tools and debitage, shed light on the variety of adaptive systems during the late Wurm period. The presentation includes problems such as transition to the Upper Paleolithic, emergence of blade techniques, large "ring model" of settlements with lithic concentrations, meaning of various types of knife blades, introduction of micro-blade technology to the archipelago from the north, and cultural transformation toward the Jomon Age. Results of meticulous microwear analysis are connected to large scale understanding of human adaptations with key concepts of technological organizations and inter-intra site variabilities.

Al Kuntar, Salam (University of Pennsylvania)

[11] *Heritage Preservation Efforts in Northwest Syria*

As the security situation in northern Syria deteriorated following the beginning of the Syrian Revolution/civil war, members of civil society, heritage activists, and museum workers have placed themselves at risk to safeguard the country's cultural heritage. This paper discusses two heritage protection projects in the Idlib region in northwest Syria, a region that has fallen out of the control of the Assad regime to opposition groups. The projects are self-initiative efforts by local activists and are supported by the international Safeguarding the Heritage of Syria and Iraq Project. Situated at one World Heritage Site and another important Tentative World Heritage Site, these projects aim to document damage, preserve the most at-risk parts of the sites, and prevent further site looting. Implementation teams leading these efforts are working closely with local communities and internally-displaced Syrians who have taken refuge at the heritage sites, with the goal of involving these affected groups directly in the protection of their cultural heritage.

Alaica, Aleksa [99] see Spence-Morrow, Giles

Alaica, Aleksa (University of Toronto)

[135] *Moving the Animal: Camelid Herding on the North Coast of Peru and the Temporalities of Human-Animal Interactions during the Moche Period*

The north coast of Peru during the Middle Horizon Period witnessed a shift in the way that people, things, and animals moved across the landscape. The often fragmented polities that formed the occupation sites for communities engaged in Moche ideology and politics were also associated with trade and interregional interaction on a different scale. The role of animals in this exchange is often overlooked and taken for granted. Camelids (alpacas and llamas) were the conduits of mobility within the highlands and on the coast of Peru with skeletal evidence revealing the intensity of caravan trading. If we consider the amount of time dedicated to the exchange of things, ideas, languages, and even the movement of entire communities, animals—in particular, camelids—were present for each of these processes. The reorganization of temporalities that surrounded camelids not only reordered the lives of how these animals were used but it also restructured the way that human communities engaged with the landscape, with each other, and how the notion of value was altered by the use of animals. This paper will argue that the intensified use of animals as a means of mobility ignited a recapitulation of communities, politics, and self.

Albarracin-Jordan, Juan [139] see Capriles, Jose

Albert, Rosa María [125] see Alonso Eguíluz, Mónica

Alberti, Benjamin [99] see Laguens, Andres

Albury, Nancy [222] see Steadman, David

Alcaina Mateos, Jonas [125] see Lancelotti, Carla

Alcantara, Keitlyn (Vanderbilt University Department of Anthropology), Lane F. Fargher (Centro de Investigación y de Estudios Avanzados de), Aurelio Lopez Corral (Instituto Nacional de Antropología y Historia - TI), John K. Millhauser (Department of Sociology and Anthropology, North Ca) and Verenice Y. Heredia Espinoza (Centro de Estudios Arqueológicos, El Colegio de Mi)

[86] *Burial Distribution as a Reflection of Social Organization in Late Postclassic Tlaxcallan*

The Late Postclassic state of Tlaxcallan represents a void in Aztec hegemony that is still poorly understood. Ethnohistoric studies, extensive archaeological survey and limited excavation suggest that the social and political organization of this group diverged from the empire's policies of rule, allowing for much local authority and cooperative governance. Fargher et al. (2010) argue that a unique form of social organization may have contributed to the state's ability to remain autonomous from the Aztec Empire. Mortuary archaeology and the analysis of burial patterns contribute a new line of evidence for reconstructing past ideology, social organization, and political relationships. Comparing preliminary excavation results to patterns found at earlier and contemporaneous sites in Mesoamerica, this paper will use mortuary archaeology to explore the significance of burial patterns at Tlaxcallan. Excavations conducted in the 2013–2015 field seasons of the Proyecto Arqueológico de Tepeticpac and Tlaxcallan Archaeological Project revealed burials in four central plazas, with no burials appearing in household contexts. This pattern may suggest a more collective burial trend, which downplayed residential structures as centers for the creation of group identity. The burial patterns found will be further discussed in the presentation.

[86] *Chair*

Alconini, Sonia (University of Texas At San Antonio)

[51] *Inka Frontier Political Economy: The Kallawayas and Yampara*

In this paper I will evaluate the political economy of the ancient Inka imperial frontier in order to understand the ways in which competing border lords affiliated themselves to the empire, including associated processes of social competition, specialized production, and changes in the indigenous local trajectories. In doing so, I will explore two Inka frontier segments. The first is located in the Yampara territory in the southeastern region, and the second, in the central frontier in the Kallawayas region. Using regional-scale surveys, site excavations, and comparison of the architecture and cultural materials, I will discuss the ways in which the Inka presence affected existing settlement trajectories, promoted changes in the exchange networks and local economies, and prompted the massive migration of mitmaquna colonies.

[259] *Discussant*

Alcover, Omar (Brown University)

[228] *Pyramids, Plazas, and Walls: Hilltop Settlements at the Periphery of El Zotz, Guatemala*

Landscape studies provide new insights into the ways communities manipulated and used their environments. Among the ancient Maya, settlements at the outskirts of important centers varied greatly in design, elevation, and function, pointing to a unique and complementary form of urbanism. Among these, hilltop groups are key to understanding some of the social and political dynamics taking place in the Maya Lowlands. Serving as strategic locales in the landscape, hilltop settlements served varying roles for the nearby community. Recent research at the site of El Zotz draws attention to the importance of hilltop groups at the periphery of civic-ceremonial centers, evidencing clustering of Early Classic (AD 250–AD 600) settlements at hilltops with subsequent Late Classic (A.D. 600–900) architectural groups dispersed on ridges and valleys. The design and material culture associated with these structures suggest that they were unique, yet complementary architectural groups, serving particular social and political roles in the Buena Vista valley. Drawing on GIS analysis, landscape studies, and ethnographic research, this paper seeks to understand changes in the use and manipulation of the landscape in light of varying political dynamics taking place in the Maya Lowlands during the Early Classic to Late Classic transition.

[228] *Chair*

Aldana, Gerardo (University of California Santa Barbara)

[273] *14C and Maya Long Count Dates: Refining the Approach to Classic Maya Chronologies*

In 2013, an innovative study applied Bayesian statistical analysis to new AMS 14C samples taken from a Classic Maya lintel originating at Tikal. Because the lintel was inscribed with a Maya Long Count date, the authors argued that the results of their study confirmed the Calendar Correlation Constant known as the GMT. There are, however, two key problems with this new study and its conclusions. The first is an error of interpretation of the hieroglyphic text; the second is the questionable handling of an underlying assumption within their problem formulation. In this paper, I offer a new analysis of the 14C record from Tikal that incorporates the abovementioned study's new data, but yields different results. For this study, I offer a new method for integrating multiple Long Count dates into the construction of a site's/structure's 14C chronology, I correct the error in hieroglyphic interpretation, and I reconsider the key assumption behind the former study's conclusion. The result supports the broader application of Bayesian statistics to 14C datasets within Maya archaeology, and while it corroborates the 1 σ accuracy of the GMT, at the same time it opens up the possibility of revision by 20 or more years.

Aldenderfer, Mark (University of California)

[178] *Early Expressions of Persistent Leadership and Inequality in the Andean Preceramic*

Research over the past few decades in the Andean world has identified a number of preludes to sociopolitical complexity, persistent leadership, and emergent inequality that involve a diversity of social and cultural forms, including the control and manipulation of ritual or religious power, the mobilization of labor to construct a variety of forms of public architecture, the display of status or prestige items, and control over access to socially valued goods. In many archaeological contexts across the region, different combinations of these preludes have been observed. Unsurprisingly, not all preludes lead to persistent leadership and a greater degree of social inequality. In this paper, I will compare and contrast successful and failed trajectories in these preludes in search of commonalities that help to explain the emergence of complexity from this preceramic baseline.

Alegria, Crystal [71] see Malloy, Maureen

Alemán, Diana [102] see Seki, Yuji

Alex, Lynn [266] see Pope, Melody

Alexander, Rani (New Mexico State University) and Héctor Hernández Álvarez (Facultad de Ciencias Antropológicas, Universidad A)

[100] *Household Ecology and the Legacy of the Secondary Products Revolution in Yucatán*

In this paper we examine the changes in household ecology that resulted from the introduction of European domesticates and their secondary products to Yucatan after the sixteenth century Spanish invasion. Andrew Sherratt proposed that nineteenth-century industrial capitalism in Europe was predicated on the substitution of animal traction and derivative secondary products for human muscle power. Yet, in Yucatan this developmental trajectory was not straightforward. The adoption of new plants, animals, and their derivative products not only transformed local ecologies but also contributed to uneven socioeconomic development across the peninsula. Archaeological and zooarchaeological evidence dating to the nineteenth and twentieth centuries from laborers' house lots at the Hacienda San Pedro Cholul is compared to evidence from domestic contexts found in eighteenth- and nineteenth-century farming settlements in central Yucatan. The environmental legacies of Sherratt's secondary products revolution in Yucatan involved alteration of mutualistic relations among humans, plants, and animals; changes in farmers' patterns of movement between their houses and their fields, household organization and the gendered division of labor; and transformation of hydraulic technologies and transportation across the landscape.

Alexander, Craig [146] see Freund, Kyle

Alexandrino Ocaña, Grace (Stanford University - PACO) and Rosa Maria Varillas Palacios (Pontificia Universidad Católica del Perú - PACO)

[151] *Cerro de Oro Funerary Practices: Continuity and Change in Two Funerary Bundles from the South Coast of Peru*

The following presentation will compare and contrast two funerary bundles found in the Cerro de Oro site (Cañete Valley, Peru). One from an intrusive Wari funerary structure, with more than 250 offerings, including over 100 textiles which present an unusual variety of manufacturing techniques and iconography. The other, from a local earlier Cerro de Oro occupation; though smaller in size and quantity of offerings, is still impressive being the first bundle of this complexity found for this time period. By making special emphasis on the analyses of the textile offerings, it will be attempted to show both continuity and change in the funerary practices for these two different occupations of the same site.

Alfaro, Silvia [57] see Falabella, Fernanda

Alfonso-Durruty, Marta (Kansas State University, SASW Department), Flavia Morello (Centro de Estudios del Hombre Austral, Instituto d), Miguel Vilar (Genographic Program, National Geographic Foundation), Nicole Misarti (Water and Environmental Research Center (WERC), Un) and Headley Dustin (Department of Interior Architecture and Product De)

[204] *Preservation of Ancient Teeth Geomorphometry through Computer Tomography Scanning and 3D Printing: An Accuracy Test*

Human remains are pivotal to our understanding of the past. While much bioarchaeological analysis continues to rely on macroscopic and non-invasive methods, scientific and technological developments in the last 30 years have revolutionized the discipline. Among others, isotope analyses, and the extraction of ancient DNA (aDNA) have further unveiled the richness of information that bones and teeth can provide. In spite of their potential, the application of these methods is limited due to their invasive and destructive nature. The development of 3D technology has dramatically altered the storage and dissemination of archaeological material for educational, culture management, and scholarly projects. This study presents the implementation of Computed Tomography scanning (CT) along with 3D printing, in the fabrication of casts of ancient teeth prior to aDNA extraction and sequencing. This study presents all the processes involved in the production of an accurate product, including: CT scanning, CT imaging conversion for 3D printing, and 3D printing. The study also compares the original teeth with their respective casts to test the accuracy of the information generated by the 3D models. Overall, this application preserves the geomorphometry of the teeth, while enabling their replication and expanded dissemination through digital file sharing and reprinting.

Alfonso-Durruty, Marta [206] see Vilar, Miguel

Alix, Claire [124] see Crawford, Laura

Alix, Claire (CNRS UMR9096 / Université de Paris 1 Sorbonne), Glenn P. Juday (Natural Resources and Extension, University of Ala) and Jess Ryan (Natural Resources and Extension, University of Ala)

[217] *Following in Giddings' Footsteps—Tree-Ring Signal, Dendro-Provenance, Travel Time and Climate Sensitivity of Alaska River Driftwood, a Key to Tree-Ring Dating of Archaeological Wood in Coastal Alaska*

Giddings' pioneering dendrochronology research in Alaska and his extensive and impressive sample collections were left mostly untouched since the 1960s. For the last 10+ years, we have undertaken an effort to re-establish a library of dendrochronologies from live trees along the main driftwood-producing rivers in Alaska to re-initiate archaeological tree-ring research in Arctic coastal regions. We are now examining Giddings' original samples, most of which were never measured. We believe these samples have the potential to lengthen chronologies characteristic of different forest types and to confirm regional tree-ring signals in the state. Trees from interior Alaska fall in the rivers and are transported downstream to the sea. Some logs get stuck in the rivers, others sink in the ocean, while a few end up on the coast and are used by people. Over the centuries, wood remains have been frozen into archaeological middens, which are under-utilized for chronological and climatic reconstructions. In this paper, we refine Giddings' original conclusions, propose an average transit time for driftwood between place of origin and first use, and discuss applicability of chronologies to archaeological wood. Potentially, Giddings' trees also share common climate signals, which would be useful for long-term climate reconstructions.

Alizadeh, Karim (Harvard University)

[87] *Residential Segregation at Köhne Shahar, an Early Bronze Age Settlement in Iranian Azerbaijan*

There are some important differences between modern and ancient urban centers in terms of contextual variables and some social dynamics; however, theoretical frameworks derived from studies on social composition of modern urban centers can provide useful insights into the organizational dynamics of complex societies in the past. Hence, current understanding of the dynamics of residential segregations may enable us to address anthropological and archaeological questions. Our surveys and excavations at Köhne Shahar, an Early Bronze Age and Kura-Araxes settlement in Iranian Azerbaijan, demonstrated that a fortification wall separated a densely built citadel or inner town from the more sparsely built extramural area. Because of its social implications, understanding residential segregation at the site is very important. Understanding residential segregation at the site not only may shed some light on internal dynamics of the settlement and Kura-Araxes communities but also highland societies of the ancient Near East. This paper aims to address possible causes and consequences of residential segregation at Köhne Shahar.

Allaby, Robin, Oliver Smith (University of Warwick) and Vincent Gaffney (University of Bradford)

[223] *Identification of Early Anthropogenic Movements of Exotic Species using sedaDNA*

The Anthropocene is defined as the global modification of ecosystems by anthropogenic activity and is evidenced by traces in the geological record. Debate is ongoing regarding the onset of the Anthropocene, with some regarding the first traces of human activity as a starting point, while others point to later intensification and clearer anthropogenic signatures as more suitable. An early geological signature of human activity is recorded in the DNA laid down and sealed in marine sediments (sedaDNA). In this context we can see the arrival of non-endemic organisms associated with humans such as the exotic species associated with the Mesolithic/Neolithic transition. The integration of archaeological and genetic information sheds light on the development of the human ecology of the Neolithic in North West Europe, which in turn informs the process by which large scale ecologies were influenced by humans. The marine sedaDNA approach releases a latitudinal constraint on ancient DNA investigations because of the pan global nature of the preservation environment. In the future we can expect to see such approaches applied on the tens of thousands of years time scale, possibly capable of detecting the geological influence of humans from their initial expansions out of Africa.

Allard, Amelie (University of Minnesota)

[70] *The Eighteenth-century Fur Trade: A Colonial Endeavor?*

The late eighteenth-century fur trade in the western Great Lakes region offers a particular multi-ethnic context in which social relations between Indigenous peoples and men of European or mixed descent were created and negotiated on a daily basis. With his seminal book "The Middle Ground," Richard White (1991) challenged prior views, often of a Marxist bend, of the fur trade as a strictly colonial endeavor that led to the inevitable acculturation of Native peoples. While the Montreal merchants and their fur traders may have harbored feelings of superiority over Native peoples, in practice power relations in the interior were not always in favor of Europeans, quite the opposite. In this paper I explore these notions and the potential applicability of the colonialism framework to the interpretation of fur trading endeavors in the western Great Lakes. Using examples from Réaume's Leaf River Post, a late eighteenth-century trading post in Central Minnesota, I argue that practices and discourses rather suggest an ambivalent rhetoric that embodied a tension between

colonial ideals of social boundaries based on ethnicity and rank, and a desire to belong to the fur trade community, itself a community on the move.

[70] *Chair*

Allard, Francis (Indiana University of Pennsylvania)

[173] *Out of Sight and Out of Mind? The Non-Funerary Burial of Objects in Early Southeast China*

The archaeological record of Lingnan (Guangxi and Guangdong) during the Neolithic and Bronze Age periods includes many non-utilitarian objects buried singly or in small groups, in non-funerary contexts that suggest widely shared ritual beliefs. Examples include the so-called "stone shovels," the majority of which have been found in southern Guangxi, as well as a number of later bronze vessels and bells which appear to have originated in central and northern China. Importantly, many of these stone shovels and bronzes travelled within Lingnan along what were likely indirect exchange routes. The details of such objects' depositional contexts suggest that even as knowledge of their specific origin and function were likely forgotten over the course of long-distance movements, they nevertheless played a 'terminal' role in generalized and widely-shared behaviors marked by the non-funerary disposal of 'exotics.' This finding in turn points to the need to differentiate between generalized and specific ritualized behaviors, whose respective spatio-temporal 'borders' may not be coterminous.

Allen, Susan (University of Cincinnati) and China Shelton (Framingham State University)

[19] *Disturbing Households: Assessing Contextual Integrity with Botanical Remains*

Since 2008, we have been investigating botanical evidence for subsistence practices, economic organization, and environmental change at the Bronze Age site of Iklaina in southwestern Greece. The spatially intensive sampling strategy we have adopted—the first of its kind to be applied to a Mycenaean administrative center—promotes a high spatial resolution for the archaeobotanical dataset. As such, in addition to providing insights concerning changes in subsistence and land use during the Mycenaean period, the macrobotanical assemblage illuminates deposit taphonomy, particularly concerning plant macroremain preservation and contextual integrity.

In addition to generally poor preservation of carbonized plant remains, our samples also include modern carbonized materials that result from on-site burning of olive trimmings and adjacent surface vegetation. To assess post-depositional disturbance, we developed a method for calculating a modern seed rain contamination value (MSRC) through semi-quantitative recording of the relative abundance and diversity of modern seed rain types. Our assessment of samples from two household units using MSRC highlights differential disturbance within and between rooms and reveals loci where plant remains likely reflect human behavior. We argue that the use of MSRC facilitates recognition of charred plant remains that cannot be assumed to be ancient or to reflect past human behavior.

Allen, Kathryn (University at Buffalo)

[147] *Life in Suleiman's Army: Preliminary Investigations of Health in an Ottoman Cemetery Site*

In recent years, analyses of human skeletal remains have significantly contributed to our understanding of the past. A cemetery collection of 160 skeletons from the sixteenth and seventeenth centuries excavated from the city center of Timișoara, Romania have provided a rare opportunity to study a brief, tumultuous time when the Ottoman Empire extended into Central Europe. The inhumations, representative of the Ottoman population that relocated into the fortified city center after Turkish expansion, provide insight into the composition and health of this military group. Preliminary research on more complete inhumations was conducted in the spring of 2015. Biological profiles indicate a larger percentage of males than females, unsurprising results for a garrison town. Preliminary pathological investigations highlight a wide range of pathological insults on the skeletal remains relating to trauma and disease, as well as non-specific indicators of stress. Future research will solidify conclusions but initial results indicate a stressful time for those responsible for the day-to-day operations of the empire's borderlands. While it is rarely denied that colonization results in deleterious health effects for conquered populations, this study may indicate biological impacts on the conquerors as well.

Allen, Melinda (University of Auckland), Alex Morrison (International Archaeological Research Institute, I) and Andrew McAlister (University of Auckland)

[296] *Modelling Climate Impacts on Human Societies and Marine Fisheries in Central Polynesia*

The effects of past climate change on Polynesian societies are poorly understood, in part because detailed palaeoclimate records have been lacking. Drawing on recently assembled palaeoclimate observations from across central Polynesia, along with those from realistically forced climate simulations, we assess how climate variability affected marine fisheries and long-term trends in harvesting practices. Little Ice Age (ca. A.D. 1400–1800) conditions are modelled for central Polynesia focusing on those likely to affect nearshore fisheries, such as variability in sea surface temperatures, cyclonic activity, and the tempo of El Niño-Southern Oscillation (ENSO) activity. The hypothesis that Little Ice Age conditions adversely affected marine fisheries in this region is evaluated, comparing model expectations with archaeological observations. To this end we use the almost-atoll of Aitutaki in the southern Cook Islands as a model ecosystem, exploiting both its central location with respect to (ENSO) processes and its robust archaeofaunal archives.

Allison, James (Brigham Young University)

[104] *Rethinking Fremont Chronology*

The dating of Fremont sites is based almost entirely on radiocarbon dates. A large number of dates exist from the region as a whole, but many of the largest Fremont sites are poorly dated. Most of the important sites excavated prior to the 1980s have at best a few dates, and many of the dates that do exist are on charcoal from structural wood. In some cases the only available dates are clearly centuries too early for the sites and structures they purport to date. In addition to problems with the data, some reports and publications about Fremont archaeology make statements about Fremont chronology that do not actually rely on the available radiocarbon dates. Instead, they recycle assertions about Fremont chronology that have been repeated for decades and ultimately are based on dubious (or at least debatable) interpretations of small numbers of charcoal dates obtained in the 1960s and 1970s. Based on the much larger number of dates now available, including a number of not-yet-published AMS dates on cultigens from some of the classic Fremont sites, this paper reexamines the dating of individual sites and the Fremont tradition as a whole.

Almeida, Fernando [23] see Garcia, Lorena

Alonso Eguíluz, Mónica (Equip de Recerca Arqueològica i Arqueomètrica University of Barcelona (ERAAUB)), Rosa María Albert (Catalan Institution for Research and Advanced Stud) and Javier Fernández Eraso (University of Basque Country, Research Group in Pr)

[125] *Microarchaeology Applied To Fumier Deposits: The Use Of Phytoliths, Spherulites And Ash Pseudomorphs As A Tool For Reconstruct Livestock Practices*

Fumier deposits are important sources of information to better understand past livestock practices. The Neolithic site of Los Husos II (Álava, Spain), in the upper Ebro Basin, is the oldest Basque Country site where livestock practices were detected dating to 6990–6760 cal B.P. Hence, the site offers a unique opportunity to study the adaptation of early livestock practices and their expansion to the western Pyrenees, as the Ebro Basin is the main route by which the new economic system penetrated. We present the results of the study of the fumier deposits from Levels IV to IX through phytoliths, spherulites, and ash pseudomorphs analyses. The results indicate a constant pattern in livestock practices throughout the study period. The principal component of the cattle diet was that of wild grasses from the vicinity area. The presence of inflorescences suggests a summer grass-rich diet. In addition to grasses, dicotyledonous plants were also documented, both through phytoliths and ash pseudomorphs. Faecal spherulites from herbivores were also noted and together with phytoliths and ash pseudomorphs give important information regarding formation processes of the studied deposits.

Alonzi, Elise (Arizona State University)

[30] *Results of the 2015 Repatriation Survey*

In 2015, the Society for American Archaeology conducted a survey on members' opinions on repatriation and the SAA's Statement Concerning the Treatment of Human Remains. Among other things, this survey was intended to gauge support for changing the SAA's statement to privilege the wishes of Native American communities, to emphasize scientific values, or to more strongly recognize interests of multiple stakeholders. The majority of the 1,905 respondents to the survey believe that the SAA's Statement Concerning the Treatment of Human Remains should be changed, but opinions are divided on how best to revise it. The paper will show how beliefs about changes to the SAA Statement Concerning the Treatment of Human Remains are related to reported demographic factors, including year of degree, work setting, research region, and past experience with repatriation. Survey results reveal that attitudes towards changing the Statement differ amongst groups who earned degrees in different decades and who have different previous experiences with repatriation. Results of interviews with a few individuals identified with the different positions will provide additional context for discussing the statistical results.

Alonzi, Elise [147] see Daly, Niamh

Alsherif, Ahmed (Sebha University, Libya)

[224] *The Cultural and Historical Connection between Tefinagh Inscriptions and Rock Art Sites in Tadrart Acacus (Southwest Libya)*

This paper discusses what kind of cultural and historical correlation between Tefinagh inscriptions and rock art in the Tadrart Acacus. The Tuareg alphabet, Tefinagh, is one of ancient African alphabets documented not only in Libya but also Algeria and Tunisia, among other countries. It is traditionally taught by a mother to all her children. This alphabet, which dates back at least to the second half of the first millennium B.C.E, is used by approximately 50 percent of the Tuareg for short messages and inscriptions. Furthermore, hundreds of Tefinagh inscriptions have been discovered in the Tadrart Acacus, some placed near or at sites with rock art. The rock art sites in the Tadrart Acacus dated from 12000 B.C.E to 100 C.E. The study area, Tadrart Acacus, is an area of about 150 km in length and 50 km in width. It is located in the Fazzan region situated in southwest part of Libya. Tadrart Acacus hosts one of the richest concentrations of Saharan rock art and was included on the UNESCO list of World Heritage Sites in 1985. This paper attempts to undertake interviews with Tuareg people as per the questionnaire provided, and also uses standard recording sheets.

Alt, Susan [18] see Pauketat, Timothy

Alt, Susan (Indiana University Bloomington)

[107] *Mother Earth, Father Sky, Figurative Art and Reproduction at Cahokia and in the Mississippian World*

In the Cahokian world the sounds and sights of night would have brought stories: the moon, morning star, and evening star; human origins. Origin stories generally abound with sex (mother earth, father sky), but our analyses are oddly devoid of sex. Yet Mississippian figurative art plays with the seen and unseen of sex as it hints at how cosmic principles, sex, and gender were entangled and tied to night and reproduction. By focusing on reproductive themes, but not sex, archaeologists have not fully faced feminine principles. They have instead focused on warrior and shaman images. In the Cahokian figurative world, where women birth corn and gourds, much more can be teased out about how sex and reproduction were intertwined with the cosmos at night.

Altamirano-Sierra, Ali [283] see Avila Peltroche, Mary Claudia

Altenderfer, Mark [19] see Zimmermann, Mario

Altschul, Jeffrey [10] see Majewski, Teresita

Altschul, Jeffrey (Statistical Research, Inc./SRI Foundation)

[261] *Discussant*

Álvarez-Fernández, Esteban [177] see Steele, Teresa

Álvarez-Sandoval, Brenda [236] see Aguirre-Samudio, Ana

Alves, Daiana (University of Exeter), Jose Iriarte (University of Exeter) and Denise P. Schaan (Universidade Federal do Pará)

[263] *Ancient Plant Management at ADEs on Santarem Region from an Archaeobotanical Approach*

ADEs are highly fertile soils found in association with archaeological sites all over the Amazonia that result from ancient societies' landscape management. We present preliminary results on the research of plant consumption on Amazonian Dark Earths (ADE) sites at Santarem region, Lower Amazon. To tackle questions concerning plant food production and the formation of ADEs at the region three sites are under investigation from an archaeobotanical approach: Serra do Maguari and Cedro on terra firme plateau and the riverine Porto de Santarem. Soil samples for phytolith and micro charcoal analyses were collected in test pits column soils and excavations on the sites. So far, palm phytoliths were identified on samples from Serra do Maguari.

Alveshere, Andrea (Western Illinois University)

[285] *Field and Forest, Pond and Stream: Experimental Taphonomic Research in West-Central Illinois*

Established in 2015, the Western Illinois Taphonomic Research Sites provide access to a variety of environmental contexts for experimental research in skeletal and molecular taphonomy. These secluded, rural sites include deciduous wooded and open areas along a creek in a deep valley, and a hilltop coniferous forest bordering an upland pond. Equipped with several game cameras, these unfenced sites afford unique opportunities to observe the responses and effects of local wildlife as they encounter decomposing faunal remains. Carcasses are deposited at the sites, in buried or surface contexts, as they become available from area agricultural programs. Studies of soil and water chemistry, site vegetation patterns, insect activity, decomposition rates, and skeletal and molecular taphonomy are ongoing. This presentation will summarize the results of the first year of research, and ideas for project expansion.

Amador, Julio (UNAM)

[175] *Defining Sacredness of Rock Art Sites in the Sonoran Desert*

Based on landscape archaeology, archaeoastronomy, the analysis of rock art iconography, ethnohistoric, and ethnographic documents, this paper proposes to define the factors that determine the sacredness of rock art sites in the Sonoran Desert. Well characterized common patterns can be found in most of the rock art sites that will be described, facts that confirm with certainty we can speak of shared cultural traits within the region.

Ambrose, Stanley (U. Illinois, Urbana-Champaign), Andrew Zipkin (U. Illinois, Urbana-Champaign), Mercy Gakii (National Museums of Kenya) and Craig Lundstrom (U. Illinois, Urbana-Champaign)

[13] *Ethnography and Archaeometry of Red Ochre use by the Maasai and Samburu in Kenya*

Red ochre occurs in African archaeological sites spanning more than 250,000 years. It is usually considered to be evidence of the evolving capacity for symbolic behavior. If geological outcrops have distinctive geochemical fingerprints then it may be possible to determine the sources of pigments in archaeological sites and rock art, and reconstruct source preferences, transport distances, and perhaps exchange network patterns. Although ochre is almost universally used in Africa, ethnographic descriptions of red ochre source exploitation patterns, selection criteria, preparation, and uses are virtually unknown. In 2012 we undertook a pilot study of ochre source geochemistry in the southern and central Rift Valley of Kenya, and found excellent discrimination among sources. In 2015 we systematically sampled 42 geological sources of ochre in the northern and southern Rift, guided by Maasai and Samburu informants who we interviewed about their traditional uses of ochre. We also collected samples from 12 rock art sites, and pigment fragments and artifacts with ochre residues from 10 Middle Stone Age, Later Stone Age, and Neolithic sites. We will provide an overview of what we have learned thus far from this ethnographic survey, and from trace element and isotopic analyses of these samples.

Ambrosino, Gordon (La Universidad de Los Andes), Antonio Curet (The Smithsonian) and Jill Segard (Field museum)

[50] *Rock Art of the Ceremonial Center of Tibes, Ponce, Puerto Rico*

Located near the south-central coast of Puerto Rico, the site of Tibes is the earliest known civic-ceremonial center in the Greater Antilles. Systematic mapping, nighttime photography, and 2-dimensional drawing, during the 2010 field season, revealed a total of 17 petroglyph panels, displaying anthropomorphic, zoomorphic, geometric, and abstract imagery. All of the rock art panels that remain in situ are integrated with several of the ceremonial plazas, which characterize the site. They are located on a variety of rock types, display varying degrees of conservation, and are generally oriented towards the plaza's interior. It is still unknown if these inscriptions were created before, during, or after the construction of the plazas. However, these factors combine to suggest that these art works played a critical role in the site's formation and redefinition. Specifically they indicate that the plan of Tibes may have changed through time, in that these structures were built, dismantled, and their parts were re-used in the construction of new structures. These associations of rock art, in a built environment, inspire new debates regarding the production and use of rock art, in terms of locational strategies, in the region, over time.

Ames, Kenneth [114] see Gilmour, Danny

Ames, Kenneth (Portland State University), Kisha Supernant (University of Alberta), Andrew Martindale (University of British Columbia), Susan Marsden (Museum of Northern British Columbia) and Corey Cookson (Treeline Consulting LLC)

[132] *A Hunter-Gatherer-Fisher Urban Landscape in Prince Harbor, British, Columbia?*

Urbanism is almost exclusively associated with agriculture, although hunter-gatherers sometimes have seasonal aggregations numbering in the thousands. This paper considers the evidence for an urban-like settlement on the northern Northwest Coast. By A.D. 1787, the villages of nine tribes of the Northern Tsimshian were concentrated in a small area in Prince Rupert Harbour (PRH), British Columbia and had been so for centuries. Prior to ca. 1500 cal B.P. the Northern Tsimshian lived in villages of varying sizes scattered throughout their territory. At some point after that date, this settlement pattern was reorganized with residential sites in the region abandoned and those in the PRH expanded into a residential core. Available data suggests harbor village middens grew to accommodate the increased population, with some reaching 55,000 m². There is also evidence that these villages were not independent, but rather formed a linked network for defense as part of an urbanized political alliance. What had been residential areas became a logistical hinterland for the PRH villages.

Ames, Nicholas (University of Notre Dame), Meredith Chesson (University of Notre Dame), Ian Kuijt (University of Notre Dame) and Rahul Oka (University of Notre Dame)

[171] *Complex but Equal: Developing an Archaeological Inequality Index to Investigate Social Inequality at the Bronze Age III site of Numayra, Jordan*

The origins, evolution, and variation of inequality comprise a central overarching theme within anthropological archaeology. Various ideas, including hierarchy and heterarchy and their material correlates, have been proffered to explain the origins and impact of inequality on past social, economic, and political organization. Within Economics and Development Studies, various indices and measures, e.g., Gini coefficient, Theil Index, HDI and GDP, and the Consumption Approach have been offered as potentially useful approaches for measuring inequality. Although many of these approaches are not directly applicable to the archaeology given the relative holes within the paucity of data, we can combine the theoretical bases of the approaches with cross-cultural ethnographic data on using material and spatial indicators, and differential consumption to develop an Archaeological Inequality Index (AI) (Oka 2013) to infer and quantify inequality in human societies. Applying AI to the fortified Early Bronze Age III site of Numayra (c.2850–2550 B.C.E. cal), we argue that despite considerable architectural and economic complexity, there is no significant evidence to suggesting institutionalized inequality in Numayra in any of the phases of settlement. The Archaeological Inequality Index provides an alternative means for understanding and assessing inequality or lack thereof in past societies.

Anbar, Ariel [135] see Marsteller, Sara

Anderson, David (University of Tennessee)

[55] *Climate Change and Cultural Response in Holocene Southeastern North America*

The historical trajectories of many societies in southeastern North America have been linked to changes in climate and biota. Rainfall regimes influenced population distributions as much as political geography during the late prehistoric era, and arguably well back into the past. Likewise, sea-level fluctuations shaped settlement near changing shorelines and resulted in population movement over much larger areas. Changes in biota over large areas brought about changes in settlement at the macroscale, as when mixed hardwood communities were replaced by pines in the Coastal Plain during the mid-Holocene. These offer insight into changes and responses likely in the near future.

[5] *Discussant*

Anderson, Derek (Mississippi State University) and D. Shane Miller (Mississippi State University)

[8] *The Mississippi Paleoindian and Early Archaic Point Database Redux*

The Mississippi Paleoindian and Archaic Point Survey was initiated in 1968 by archaeologists at the Mississippi Department of Archives and History, and due largely to the efforts of Sam McGahey over the next 30 years, grew to include over 2,100 points at the time of his retirement in 2003. The survey was idle for a decade, but was recently reinstituted with the help of numerous avocational "citizen scientists" who share an interest in Late Pleistocene and Early Holocene hunter-gatherers. Intact Paleoindian and Early Archaic sites are rare in Mississippi, and most of the projectile points that are recovered from these time periods are isolated finds from disturbed contexts like fields and streams. These points are often the only artifacts that remain from early cultural groups, and our interpretations about the people who used them are based on locations of finds, raw material types, and morphometrics. This poster reintroduces the updated Mississippi point survey, provides examples of the variety of early points found throughout the state, and examines distributions of styles and material types across time and space.

Anderson, David G. [49] see Carmody, Stephen

Anderson, Stephen (UMass Boston)

[61] *Smoking Areas: Change and Continuity of Eastern Pequot Smoking Practices through Spatial Analysis and Clay Tobacco Pipe Distributions*

Throughout the process of colonialism, many cultural traditions have been negotiated through the interactions of different sociocultural groups. One such tradition that was deeply affected was smoking. Tobacco, a staple product of the Americas, was returned to Europe by colonizers; this began a tobacco smoking revolution which spread clay tobacco pipes back to North America in the seventeenth century. These instruments made smoking a more accessible and leisurely activity for Native American and European communities, while also retaining some ritual significance to some Indigenous groups.

My research examines the continuity and change of Pequot smoking traditions from the late seventeenth through the nineteenth century. Data collected from numerous eighteenth- and nineteenth-century household sites from the Eastern Pequot Archaeological Field School seasons and two English households from the same period are used to explore this research problem. Specifically, the use of space and clay pipe distributions across these sites are used to determine similarities and differences of smoking practices between and within the two cultural groups over time. The aim of my comparative research is to see how this Pequot community negotiated their smoking traditions during the course of English colonization and American settler colonialism in New England.

Anderson, Andrea (University of Delaware) and Tom Rocek (University of Delaware)

[168] *GIS Modeling of Agricultural Suitability in the Highlands of the Jornada Branch of the Mogollon Culture of Southcentral New Mexico*

Changes in the importance of agriculture in prehistoric economies are of major interest in a range of contexts worldwide. Measures of site location in relation to agricultural potential are an important tool for identifying relative shifts in the importance of agriculture over time within a given region. Here we examine the application of GIS modeling of agricultural potential based on soils, topography, temperature, precipitation, and horizontal coordinates in the highlands of the Jornada branch of the Mogollon culture of southcentral New Mexico to explore shifts in agricultural reliance over time.

We describe the methods, potential limitations, and potential advantages of this approach, as well as preliminary results. Identifying variables that reliably predict agricultural potential is complicated by the limited resolution of available data for the large study area, overlapping legal jurisdictions (state versus federal land), complex topography, as well as by a lack of modern non-mechanized farming data to ground-truth estimates of relative productivity. Nevertheless, the approach allows comparisons for relative changes in settlement placement over time in relation to variables that are likely to impact agricultural productivity. Importantly, the GIS data also permit analysis of site location data biases, contrasting sites found by systematic survey versus incidental finds.

Anderson, Douglas

[217] *Discussant*

Anderson, Shelby (Portland State University)**[217]** *Arctic Ceramic Traditions and Late Holocene Social Interaction; Revisiting Giddings' Arctic Woodland Culture*

In 1952, J.L. Giddings defined the Arctic Woodland Culture as a unique northwestern Alaskan inland lifeway combining elements of both Eskimo and Athabascan cultures between approximately 800 B.P. and the contact era. He proposed that Arctic Woodland people were closely tied to both coast and interior through seasonal movements and exchange systems, and hypothesized these ties made a semi-permanent lifeway along the river possible. Subsequent research refined local chronologies and raised new questions about coastal-inland relationships during the socially and environmentally dynamic Late Holocene period. This paper explores evidence for coastal-interior interaction in northwest Alaska through analyses of ceramic distribution patterns. I will review results of new fieldwork on Giddings' sites along the Kobuk River and ceramic compositional analyses of his collections, along with new ceramic thermo-luminescence dates from Arctic Woodland sites. My results point to several distinct patterns of coastal-inland interaction that changed over time, supporting Giddings' hypothesis that a distinct Kobuk River ceramic tradition existed during the Arctic Woodland period. These findings have broad implications for Late Holocene Arctic social interaction and change.

Anderson, Amber (RIT, Medaille College)**[279]** *Sacred Spaces and Ideology in the Pambamarca Fortress Complex*

In the northern Andes of Ecuador just north of Quito lies the Pambamarca Fortress Complex. This region was one of the last to fall to the Inca in the late 1490s/1500s as they expanded their empire, and they met great resistance from the indigenous societies of Northern Ecuador. Fighting occurred for over a decade and power strategies changed to conquer this region. These struggles are apparent, best seen through the high number of Inca fortifications and enclosures throughout the landscape. The highest concentration are found in the Pambamarca Fortress Complex, which is defined by several large fortified sites, and six smaller high elevation enclosures which served as outposts, economic way stations, or sacred landscape spaces. This paper will focus on research completed at three small sites in the PFC (Pi12, Pi13, and Pi15), and will discuss their ideological and geographical importance to the Inca during their struggle. These three sites afford us the opportunity to discuss Inca ideological and religious attributes, and to explore their sacred landscape, especially in areas associated with war and conquest towards the end of their empire.

Anderson, Atholl (Australian National University)**[296]** *Ecological Contingency in Very Early Offshore Seafaring*

Recent interest in accounting for very early offshore seafaring, generally from about 15,000 to 50,000 years ago, but in some cases extending up to one million years ago, has seen arguments for and against the influence of biogeographic factors, human behavioural ecology, and advances in cognition, language, and technical expertise. I suggest that the seafaring milieu, as a natural system taking in conditions for offshore passages and the availability of resources for making offshore-capable boats, amongst other things, remains a particularly important factor. I consider comparative examples of offshore seafaring, as deduced from island colonization in Southeast Asia, East Asia, and South America, to argue that very early seafaring offshore suggests an influential role for ecological contingency.

Andrews, Anthony (New College of Florida) and Fernando Robles**[26]** *An Intracoastal Waterway and Trading Port System in Prehispanic Northwest Yucatán, Mexico*

Archaeological and historical research along the northwest coast of the Yucatán peninsula during the last half century have led to a preliminary reconstruction of a 200 km-long navigable intracoastal waterway between the Celestun estuary and Dzilám de Bravo during the Classic period. Along this waterway are remains of settlements, ports, and port complexes that supported an extensive trade network that connected northern Yucatán to more distant trade networks to the south, via the coast of Campeche and rivers leading into the southern Maya lowlands and beyond.

Andrews, Sherri [110] see Hoppa, Kristin

Andrieu, Chloé [26] see Demarest, Arthur

Andrieu, Chloé (CNRS Université Paris I La Sorbonne)**[26]** *Flake Deposits and the Missing Workshops of the Maya Lowlands: the Complexity of Classic Maya Lithic Economy*

Technological and distributional analysis of the lithic collections from Cancun, La Corona, Rio Bec, and Naachtun show that the same goods were produced under different production contexts, some specific debitage being deposited in elite cache, whereas the same flakes were also gathered in domestic refuse. This suggests that some aspects of production were carried out in independent workshops, but a part of some knapping actions were given as tribute with particular stages of debitage held in separate deposits. The proportion of this assigned production is different from one site to another, showing the diversity of Classic Maya sites in their production systems and forms of distribution of the product. This diversity in distribution of obsidian and chert, not just in terms of artifacts, but also of debitage, indicates that certain flaked items had multiple values in terms of both distribution and usage. Future studies may be able to plot the variable contexts of production and the distribution of both artifacts and by-products to help elucidate other aspects of Classic Maya economy and its variability in time and space.

Andrus, Fred [28] see Sandweiss, Daniel

Andrus, C. Fred (Department of Geological Sciences, University of Alabama)**[133]** *Assessment of Past Subsistence Strategy and Environmental Impacts using Novel Geochemical Analyses of Mollusk Shells*

Archaeologists are beginning to apply two new analytical techniques to estuarine mollusk shells: inferring paleo-salinity from sclerochronological oxygen isotope profiles and assessing anthropogenic waste loading from mollusk nitrogen isotope measurements. These related approaches may offer insight into subsistence priorities and environmental alteration, but data from each should be interpreted with caution until these proxies are more completely validated. Potential uses and limitations of these methods will be discussed. For example, absolute values of oxygen isotope profiles in American oyster (*Crassostrea*

virginica) and quahog clam (*Mercenaria* spp.) reflect the average salinity of the shellfish's habitat, permitting estimates of the relative distance people travelled to collect. However, coastal hydrology changes over time, and salinity gradients are geographically variable, so detailed reconstruction of collection location is not possible. Similarly, nitrogen isotopes measured in the shells of the same species may trend across salinity gradients, which could corroborate oxygen isotope salinity analysis. However, shell nitrogen isotope values also reflect anthropogenic N loading. Deconvoluting the influences of salinity and anthropogenic pollution could create useful proxies for both parameters, but may be difficult to accomplish in areas where environmental variation is subtle or site formation processes are complex.

Anduze, Richard [64] see Slaughter, Mark

Angelbeck, Bill (Douglas College)

[132] *Trenches, Embankments, and Palisades: Terraforming Landscapes for Defensive Fortifications in Coast Salish Territory*

The Coast Salish hunter-gatherer fishers of the Northwest Coast built substantial defenses, involving the labor of multiple households and entire villages. These fortifications, perched upon high bluff promontories or at the points of narrow coastal sandspit ridges, often involved deep trenches and steep embankments that were enclosed by tall palisades of cedar planks. Such constructions would have dominated the viewshed of their seascape. In this presentation, I'll highlight the degree of terraforming involved in their constructions and consider the monumental aspects of these defensive works. Further, I will also address the collective monumentality of numerous sites, wherein fortifications appear to be built in conjunction with neighboring sites. In so doing, they exhibit both the material manifestation of their own autonomous power in defense at individual sites, while also establishing and signifying their allied power in closely-networked fortifications to serve needs at inter-community scales.

Angiorama, Carlos (IAM-UNT/ISES-CONICET) and Constanza Taboada (IAM-UNT/ISES-CONICET)

[259] *Impact, Expansion and Heterogeneous Strategies of the Tawantinsuyu at its Borders: The Case of Santiago del Estero in the Eastern Lowlands of Argentina*

In this presentation we discuss the particular situation of a set of archaeological sites located in a small area of Santiago del Estero's lowland (central Argentina), outside the territory traditionally included in the Collasuyu. The area concentrates several sites where Inca and Andean artefacts were found at the beginning of the twentieth century, along with Inca features incorporated to the archaeological pottery and to ethnographic textiles. Moreover, there are certain kind of archaeological objects found in exorbitant number, a strong presence of quichua language in the area and myths related to the Inca. However, there are not Inca settlements or other type of Inca artefacts such as imperial pottery. The area could be the origin of ceramist and warrior mitmaquna, but also a center of production of objects at large scale. Based on on-going fieldwork, we propose that this area and its inhabitants could have been of economic and politic interest for the Tawantinsuyu. In this sense, the latter would have developed alliances with this population framed on its spatial and strategically heterogenous expansion to certain sectors of the Eastern lowlands at the end of the Empire.

Ankele, William (University of Oklahoma) and Meghan J. Dudley (University of Oklahoma)

[200] *"One of These Things Is (Not?) Like the Other:" A Reassessment of Middle and Late Archaic Projectile Point Types in the Rocky Mountains and Great Plains*

Many Archaic projectile points from the Rocky Mountains and the Great Plains are poorly defined stylistically and chronologically, particularly in contrast to those from the earlier Paleoindian Period. As a result, we suspect that projectile points are often classified as different types based solely on geographic location and not necessarily on variation in the point style or technological characteristics. Stemmed points in the Middle Archaic are called Duncan or Hanna in the north and Pinto in the south, and Middle-Late Archaic corner-notched points are Pelican Lake in the north and Elko in the south. We reassess these projectile point typologies from the Middle and Late Archaic to determine if the types differ significantly from one another when systematically compared morphologically and technologically. If they do not, it is difficult to support continued use of different terminology for statistically identical specimens.

Anovitz, Lawrence [214] see Fayek, Mostafa

Antczak, Konrad and Miguel Lentino (Fundación W. H. Phelps, Caracas, Venezuela)

[100] *"Cultivating" Salt: Human Ecology of the Saltpans of the Venezuelan Caribbean, 16th–19th Century*

This paper discusses a diachronic human ecological approach to the interaction between humans and saltpans in the Venezuelan Caribbean from the sixteenth to the nineteenth century. This research is based on historical archaeological and oral historical evidence marshaled to understand the dynamics of past solar salt production, and the impacts of the natural environment on the final product's output and quality. "Tending" a saltpan was not always straightforward business as knowledge of the weather patterns, yearly, monthly, and daily tides, and the right physical conditions and biotic factors involved in the concentration of brine and the subsequent crystallization of sodium chloride was indispensable to augmenting the quantity and quality of a salt harvest. Furthermore, human management of saltpans, such as the construction of dikes and walkways and the pervasive flattening and compacting of the ground of the pans has left still-visible modifications and impacts. This research also indicates that the Dutch in the sixteenth and seventeenth, the Anglo-Americans in the seventeenth and eighteenth, and the Bonaireans and Americans in the eighteenth and nineteenth centuries, each applied a different know-how to the process of salt "cultivation" on the Venezuelan saltpans, resulting in a variable final product geared towards diverse market necessities.

Antczak, Andrzej (Faculty of Archaeology, Leiden University, The Netherlands)

[220] *The Archaeology of the Archaic Age on Margarita Island within the Context of the Venezuelan Caribbean*

Since the 1950s, the archaeology of Margarita, the largest island of Venezuela, has been neglected, leaving an important lacunae open in the current knowledge of Venezuelan and Caribbean archaeology. In 2008, human bones were accidentally unearthed on the island, allowing the recovery of two individuals and associated cultural materials that included lithics, shells, and red ochre. The archaeological layer and human bones date to between 4,090 and 2,160 B.P. The osteological analyses show consistency with similar Archaic finds reported from the insular Caribbean and support the claim for a marked anthropo-physical difference between the Archaic Age individuals and latter Ceramic Age settlers. This discovery prompted the initial reconnaissance of Margarita and Cubagua islands carried out in 2014, and further systematic archaeological survey that began in 2015 as part of the Nexus 1492 ERC project of Leiden University, in synergy with Venezuelan scholars and institutions, and the communities of the Guaiquerí Indians. Thus far, nine Archaic sites have been located and evaluated through surface collections and test pit excavations. This paper discusses the preliminary interpretations of settlement patterns and the subsistence economy of the Archaic Age settlers of Margarita Island within the wider geographical and

historical-cultural context of the Venezuelan Caribbean.

[220] *Chair*

Antczak, Ma. Magdalena [220] see Antczak, Andrzej

Antczak, Marlena (Faculty of Archaeology Leiden University), Maria Magdalena Antczak (Leiden University, Leiden, The Netherlands and Uni), Andrzej Antczak (Leiden University, Leiden, The Netherlands) and Miguel Lentino (3Colección Ornitológica, Fundación W. H. Phelps, C)
[222] *Avian Remains from the Late Pre-colonial Amerindian Sites on the Islands of the Venezuelan Caribbean*

This paper presents the results of the analyses of an assemblage of over 3,000 bird remains systematically recovered in various late prehispanic sites (c. A.D. 1000–1500) on the islands of the Venezuelan Caribbean. We discuss possible signatures of seasonal occupancy of the island campsites as inferred from the bio-ecology of the identified bird specimens. The data indicates that several families of birds were persistently targeted by Amerindians for food and/or feathers, and their bones were used as raw material for making tools and adornments. We discuss the process of recovery of the specimens under study, their archaeological contexts, the taphonomy at play, and analyze diverse categories of bones. The analyzed categories include unmodified and modified bones, and worked bones and manufacture debitage. Bird iconography present on various artefacts recovered on the islands and the use and valuation of birds in interrelated island and mainland sites are also discussed. Finally, we examine the references to the Amerindian use of birds in the study region contained in early colonial ethnohistorical sources.

Anthony, Ronald (The Charleston Museum)

[293] *Lesesne Colono Ware*

As part of the analysis of the colono ware from Lesesne and Fairbanks Plantations on Daniel Island, South Carolina, in the mid 1980s, a class of colono ware called "Lesesne Lustered" was described and offered as a variety of colono ware likely present in colonial Lowcountry, South Carolina. Subsequent research since the Daniel Island study and a recent re-look at colono ware from selected Lesesne Plantation contexts support an interpretation of Lesesne Colono Ware as a rural as well as an urban market ware in Lowcountry, South Carolina.

Antonelli, Caroline (University at Albany—SUNY)

[270] *Ancient Impacts on a Modern Environment: Soil Management and Intensive Agriculture in a Pre-Columbian Urban Context*

This paper investigates the relationship between soil enrichment and ancient urban environments. I will measure the degree to which ancient settlement density and modern agricultural potential correlate. At the Postclassic Maya center of Mayapan, a spatial concentration of black, midden-like soils have been identified by local farmers. Results of systematic soil transect samples tested for physical and chemical properties reveal agricultural potential. Soils from the urban center were compared to those outside of the site core within and beyond the city wall. These data indicate that key features of the modern landscape derive from centuries of Pre-Columbian landscape modification. Geochemical analyses suggest intentional enrichment of and anthropogenic impacts to land use through time.

Antorcha Pedemonte, Ricardo, Lane F. Fargher (Co-Author), Richard E. Blanton (Co-Author), Verence Y. Heredia Espinoza (Co-Author) and John K. Millhauser (Co-Author)

[27] *The Build Environment on Late Postclassic Terraces in Tlaxcallan*

During intensive survey and mapping of the Late Postclassic City of Tlaxcallan, we noted that the inhabitants of the ancient city of Tlaxcallan, in Tlaxcala, Mexico, developed a dense settlement pattern and complex urban landscape during the Late Postclassic (A.D. 1250–1521). Specifically, massive terraces and open and accessible plazas dominated this landscape. In this paper, we present the initial results of excavations on a series of terraces located at the northern edge of the city. This research indicates that these terraces exhibit a complex history of construction and use. Importantly, the results demonstrate that these terraces were covered with many structures, formal patios, possible workshops, and middens that resulted from diverse activities. Furthermore, the sizes of middens indicate intensive occupation and social reproduction of terrace inhabitants. For these reasons, we suggest that these terraces were not simply agricultural terraces or the residences of nuclear-family households.

Apaydin, Veyzel (University College London)

[71] *Effective or Not? Success or Failure? Assessing Archaeological Education Programs—The Case of Çatalhöyük*

Recent decades have witnessed an increasing involvement of archaeology projects in planning and carrying out heritage education programs to increase heritage awareness among the public. This paper aims to explore ways in which models of education programmes in public archaeology could be more effective in ensuring the protection of heritage sites by examining the one of the world's longest education program that has been run by Çatalhöyük Research Project in Turkey. It is important to pay attention to multi-vocal elements such as social, political, and educational backgrounds of the communities to develop more effective education programmes, and most importantly it is crucial to assess the effectiveness and success of those programs. However, most of the archaeological education programs have failed to do this important component, too. In order to be effective and successful, the success of the education programs and the ways in which they are implemented and their results must be known and critically examined. Specifically, this paper will discuss the necessity of measuring the effectiveness of the education programmes, suggest the most suitable methodology for assessment, as this kind of study is a unique in world wide context, through examining the Çatalhöyük education programs.

Applegate, Darlene

[40] *Applying Key Archaeology Concepts: Activities for the Undergraduate Classroom*

Instruction in introductory archaeology courses focuses on student understanding of key concepts such as artifact, preservation, formation processes, context, stratigraphy, and association. This poster presents hands-on activities for applying key archaeology concepts in the undergraduate classroom.

[286] *Chair*

Applegate, Darlene [286] see McElroy, Kate

Aragon, Leslie [17] see Dungan, Katherine

Aragon, Leslie (University of Arizona)

[64] *We Built This System: Hohokam Irrigation Communities as Social Networks*

In the prehispanic Salt River Valley (SRV), the extensive canal systems that provided irrigation to the desert farmers, known by archaeologists as the Hohokam, also serve as tangible networks that link villages along an individual canal's route. Many of the villages in the valley are incredibly long-lived, spanning hundreds of years and multiple generations, providing unique time-depth in which to study how social relationships changed within a region of the Southwest. In order to better understand the relationships between villages, connectivity between them must be examined based on multiple lines of evidence. The primary objective of this research is to systematically examine the relationship between canal networks and material-based social networks in the SRV. Specifically, this study will address questions of whether or not the social networks linking settlements in the Hohokam core area were structured by their location within an irrigation network, what role irrigation communities played in surviving hardship, and how these networks changed over a millennium, from approximately A.D. 450 to 1450.

Arakawa, Fumiyasu (New Mexico State University), Garrett Leitermann (New Mexico State University), Kailey Martinez (New Mexico State University) and Austin Schwartz (New Mexico State University)

[267] *Hands-on Experience: NMSU Summer Fieldschool at Twin Pines Village in the Gila National Forest 2015*

To develop a better partnership between academics and United States Forest Service, and disseminate the concept of stewardship to the public, the Gila National Forest and the Department of Anthropology at New Mexico State University collaborated together at a fieldschool at the Twin Pines Village—a northern Mimbres settlement and the largest Mimbres phase site—for six weeks in 2015. The major goal of the project is to add our understanding of the cultural trajectory of the Twin Pines communities and assess the damage of the site by looting activities. Based on the collaboration between the two groups, students learned three major aspects of archaeological research, conservation and stewardship, and public outreach. First, although pothunters destroyed several portions of the site, the excavation at Twin Pines site still allows students to learn about the complexity of site formation processes, including natural and cultural activities. Second, the excavation at Twin Pines helps students assess looting activities and understand the significance of preservation and conservation. Finally, students have engaged in outreach programs, such as teaching K-12 students, using the Twin Pines Village collections, which enhances the concept of being stewards of cultural resources for the public at large.

Arantes, Antonio [10] see Majewski, Teresita

Araoz Silva, Miriam [198] see Bauer, Brian

Arata, Megumi [102] see Seki, Yuji

Araujo, Astolfo [292] see Feathers, James

Arbolino, Risa (National Museum of American Indian) and Kit Nelson (New Orleans Center for Creative Arts)

[67] *Archaeology Girls: Mentoring of Women in Archaeology and the 1960s Girl Scout Archaeological Unit*

In the 1960s, women were beginning to make major strides in the field of archaeology. It is also during this time that informal mentoring relationships began between women active in the field and young women interested in pursuing their interests in archaeology. One such example is the role of Bertha Dutton with the Girl Scouts during the early 1960s. Working out of Camp Elsa Seligman, Girl Scouts conducted survey and excavation within Sandoval County. Their field notes, archaeological field collections, and personal reflections document the important role of women mentorship in southwestern archaeological research while also providing important archaeological data from sites within the Jemez Springs area.

Arbuthnot, Michael (SEARCH) and Michael Faught (SEARCH)

[290] *The Karst Spring Vent as Receptacle with Meaning: Chassahowitzka Headsprings Weeden Island Period Dolphin Fin Effigy*

Restoration dredging of the Chassahowitzka Headsprings along the west coast of central Florida produced a wealth of artifacts representing virtually all culture periods including Paleoindian, Middle Archaic, early (Deptford) Woodland, late Woodland (Weeden Island), and Contact period Native American, as well as sixteenth through twentieth century Euro-American (Historic) such as rare (broken) Majolica bowls and an asymmetrical paddle. All of the Euro-American artifacts can be attributed to secondary deposition (i.e., trash and accidental loss from small boats and shore). The same is not necessarily true for the Native American artifacts. Some of these items were likely thrown into the headsprings with intention and possibly supplication. These include a Suwannee Paleoindian point, an intact Pasco Plain ceramic vessel, a large plainware bowl (broken, but virtually whole), and a carved wooden dolphin fin effigy. This latter item (1270 +/- 30 BP [AD 690–770]) is illustrated and described, and its potential meaning is compared to other rare pre-contact wooden effigies found in Florida.

Archebelle-Smith, Aric

[7] *Manasota Key Cemetery: New Burial Pattern Interpretations from the Florida Gulf Coast*

The Manasota Culture prospered from around 500 B.C. to A.D. 800 along the Florida coastline that stretches from Tampa Bay to the northern end of Charlotte Harbor. The Manasota Key Cemetery in Englewood, Florida, is one of the largest known Manasota burial sites with one hundred and twenty-two documented burials. Wilbur "Sonny" Cockrell excavated the site along with a team of Florida archaeologists and local volunteers from 1988 to 1989. Very few publications discuss the Manasota Key Cemetery. Of the few publications that do discuss the cemetery, none focus on interpreting the burial patterns present at the site. Due to the site's size and overall importance for understanding the archaeology of the Florida Gulf Coast, it is necessary to attempt to decipher the burial patterns at the cemetery. Through such an analysis, it is possible to gain insight into the lives and beliefs surrounding death of the people interred within the cemetery. This poster presents new interpretations of the site's burial patterns and examines what these interpretations may

suggest about the Manasota people.

Archila Montanez, Sonia (Los Andes University, Department of Anthropology) and Saul Torres Orjuela (Los Andes University, Department of Anthropology)

[50] *Characterisation of Charcoal Assemblages from the Ceremonial Center of Tibes, Puerto Rico*

Charcoal assemblages from five different excavation units dug at the ceremonial center of Tibes, Puerto Rico, have been studied in order to get information on human use and selection of woody taxa during the past. This archaeobotanical data will be related to the archaeological information which includes different features and cultural materials such as lithic artefacts, sherds, shells, human burials, and faunal remains.

Ardren, Traci (University of Miami)

[157] *Traditional Ecological Knowledge of Coral Reef Small Islands: A History of Human Adaptation in the Florida Keys*

The Florida Keys have been largely overlooked in models of social interactions within both Florida and the greater Caribbean. Environmentally and culturally distinctive, the more than 1,700 islands that make up this coral reef archipelago are consistently viewed from the mainland in models of human-environmental dynamics over time. This paper synthesizes available archeological data on the prehistoric human occupation of the Florida Keys with attention to the island landscapes of these sites that are unique within Florida prehistory as well as elements shared with coastal sites throughout the region. Recent new research documents the many ways Keys sites demonstrate different ecological and subsistence systems in comparison to the rest of the Glades culture area, with a greater reliance on vertebrates over invertebrates perhaps as an outgrowth of the deep water environment of the archipelago. This paper points toward possible ways to address new questions through attention to the intentional management of the rich natural resources of the Keys and adjacent regions by a population well-adapted to a delicate balance of marine and coastal relationships.

[25] *Chair*

Ardren, Traci [133] see Napolitano, Matthew

Areche Espinola, Rodrigo Javier

[151] *Cambiando Roles, del centro administrativo al centro ceremonial. El Caso de Cerro Azul, Cañete*

Los estudios incas en los Andes Centrales dan cuenta sobre los mecanismos de instituciones religiosas heredadas y desarrolladas por un estado expansivo. La importancia y éxito de estas instituciones radica en justificar y legitimar la dominación de diferentes grupos a través de la captación y manipulación de creencias locales, materializado en la reocupación de sitios religiosos locales. Sin embargo, los Incas, también, transformaron lugares secundarios en centros de poder religiosos imponiendo su orden social en las regiones conquistadas. Nos centramos en la Costa Centro Sur del Perú, específicamente en Cañete. Presentaremos el caso de Cerro Azul, un sitio del litoral mencionado en crónicas como "La Fortaleza del Huarco" y de cualidades administrativas antes de la llegada Inca. Cerro Azul muestra como los incas transformaron un sitio secundario administrativo en un centro ceremonial importante, consolidando su dominio mediante la apropiación del paisaje natural, invirtiendo grandes recursos humanos y logísticos en la construcción de edificios sagrados asociados al mar y anexándolo a un paisaje religioso imperial inter valle, tras un contexto local convulsionado.

Arenas, Camila [139] see Flores-Fernandez, Carola

Arendt, Beatrix [36] see Ptacek, Crystal

Arias, Pablo [49] see Duarte, Carlos

Arikan, Bulent

[95] *Macrophysical Climate Model and Comparisons with the Proxy-Based Paleoclimate Reconstruction in Central Anatolian Plain between 14000 and 7000 cal. B.P.*

Central Anatolian Plain, which was once covered with a Pleistocene lake, witnessed major environmental transformations from the Epipaleolithic to the end of the early Holocene. As the paleolake dried up it exposed valuable resources such as soil and created marshlands where the earliest Neolithic settlements, such as Aşıklıhöyük (tenth millennium B.P.) and Çatalhöyük (ninth millennium B.P.) emerged. These sites represent the first locales of human experimentation with domestication and they represent the establishment of the food producing economies in a different environmental context than the rest of the southwest Asia. Applying the Macrophysical Climate Model (MCM), a regression-based, local downscaling of a global paleoclimate general circulations model, will provide retrodictions of past precipitation and temperature at 100-year resolution. The results of MCM can then be compared to the results of proxy-based reconstructions. Cross-comparison of reconstruction methods will not only enable us to identify the level of correlation between different methods, hence increasing the reliability of retrodictions based on numeric models, but it will also allow us to use quantifiable results from MCM in stochastic and agent-based models of land use. Such models will be used in developing and testing hypotheses about human adaptive behavior and processes of decision-making.

Aristizábal, Lucero [122] see Bernal, Marcela

Aristizabal Losada, Lucero (Universidad de los Andes) and Melanie Miller (University of California Berkeley)

[122] *Reflexiones sobre la naturaleza del poder en una población muisca de la sabana de bogotá a través de estudio de la dieta*

En esta presentación, queremos enfocarnos en la relación entre alimentación y otras dimensiones sociales de la sociedad Muisca asentada en una aldea del sur de la Sabana de Bogotá del periodo muisca tardío, como es el caso de status y género. Tradicionalmente, se ha asumido la existencia de un grupo de élite que tuvo ciertos privilegios y beneficios por encima del resto de individuos; sin embargo, la información de la dieta a través del análisis isotópico de una muestra de 250 individuos evidencia diferentes patrones en torno a la alimentación y la naturaleza del poder de la población de estudio.

La información obtenida contribuye al debate no solo sobre el poder en la sociedad muisca, sino que también permite discutir la relación entre alimentación e inequidad, y alimentación y género, visto desde una secuencia cronológica del desarrollo biológico de los individuos.

Arjona, Jamie

[128] *Indigenous Histories and the Queer Future of Archaeological Anachronism*

Archaeological representations of modernity can inadvertently bind Indigenous history to a political past. Native origin myths, archaeological exhibits, and racist mascots cement the prior-ness of Indigenous communities. In order to challenge settlement in the present, Indigenous bodies must disrupt a settler state that fossilizes Native sovereignty. The case studies presented in this article consider moments when haunting intimacies with Indigenous presences queered the tense of settlement. Throughout this paper, I explore the queer resonance of uncanny affects swelling through earthworks encountered by Euro American settlers in the nineteenth century. Drawn towards sublime landscapes, settlers built homes and families on ruins of earthen monuments erected by Indigenous communities throughout North America. Focusing on the Emerald mound site and broader mound discourses, I examine how material intimacies underlying this nineteenth century phenomenon periodically corrupted Romantic sensibilities. Specifically, I highlight aspects of archival and spatial data that capture fleeting moments when the presence of Indigenous histories queered the tense of settlement.

Arjona, Jamie [221] see Fields, Shawn

Arksey, Marieka (University of California, Merced)

[294] *Does Size Matter? Comparing Cave Size to Degree of Modification Outside their Entrances*

Over the past three years, investigations of over fifty ritual cave sites across the country of Belize by the Las Cuevas Archaeological Reconnaissance Project and the Belize Cave Research Project have yielded surprising findings: at least nine of the caves have modifications or construction directly outside of the entrances. These modifications took place for the first and only time during the Late Classic, a centuries-long period characterized by droughts, overpopulation, the failure of Maya kingship, and a complete restructuring of the social hierarchy in the Maya Lowlands. Thus, these modifications—clearly associated with sacred features of the ritual landscape—are an ideal paradigm from which to question how ritual practices were potentially used to reinforce social rules and norms during a time of social and political crisis. However, these studies have revealed a puzzling variation in the forms and degrees of modification seen during this time period. This paper will present some of the preliminary results of analysis attempting to correlate the size of cave with the forms and degree of constructions outside their entrances in an effort to approach the potential functions that these spaces may have afforded the ancient Maya.

Arkush, Elizabeth (University of Pittsburgh)

[228] *Discussant*

Armit, Ian (University of Bradford)

[95] *Rapid Climate Change and Demographic Decline at the End of the Irish Bronze Age*

The accumulation of large 14C data-sets over recent decades provides archaeologists with a substantial resource which has only recently begun to be systematically explored. Such data-sets offer the potential to explore temporal variations in the intensity of past human activity at a range of geographical scales, although the 'reading' of such data is far from unproblematic. One area of clear potential is the relationship between patterning evident in 14C and palaeoclimate data-sets. In this paper we examine the substantial 14C data-set available for Ireland in the Later Bronze and Iron Ages (1200 B.C.–A.D. 400) in relation to the high-precision proxy climate data available for the region. In particular we will focus on the period of rapid climatic transition evident at c.750 cal. B.C.

[52] *Discussant*

Armit, Ian [103] see Büster, Lindsey

Armstrong, Douglas [126] see Williamson, Christian

Arnhold, Nicholas (The University of Kansas and AECOM) and Frederic Sellet (The University of Kansas)

[123] *Niche Construction of Predictable Landscapes: Redundant Caching in Ecological Niches on the Central Plains*

Prehistoric groups were able to anticipate the use of redundantly visited landscapes by constructing niches with toolkits, called caches. The small size of caches and frequent absence of diagnostic tools limited the information available from studying individual caches. It was hypothesized that caches were examples of anticipated mobility to provision predictable ecological niches with tools for the presence or absence of resources in potential activity areas. Sixty-two caches from the Central Plains of Kansas and eastern Colorado were compared based on their location to identify patterns in cache distribution. The caches were mapped against the distance to rivers, lithic quarries, and regional ecoregions as predictable landscapes. At least 56 percent of caches were located near transitional zones between ecoregions. The median distance between caches and rivers was 0.67 km. Additionally; 64 percent of caches were greater than 18 km from a lithic quarry. Past groups potentially anticipated their movement through transitional niches by caching, particularly near rivers and in landscapes where lithic materials were limited. While the functional role of caching may never be fully understood, this research compares caches against the externally available resources and may identify patterns in the intentional planning of cache distribution.

Arnold, Dean E. [46] see Arnold, Dean

Arnold, Dean (Field Museum) and Dean E. Arnold (Field Museum)

[46] *How Does the Organization of Ceramic Production Change through Time? An Ethnoarchaeological View*

Changes in pottery through time and their organizational correlates are fundamental to archaeological inference. Such correlates rely upon theory based upon distilling various ethnographic cases filtered through a series of socio-economic and socio-political assumptions about the relationship of production to the society at large. This paper summarizes some of the results of a diachronic study of pottery production units in Ticul, Yucatán, from 1965 to 2008. The data show that the kin structure and physical location of household production persists in comparison to other types of units such as entrepreneurial units and workshops attached to tourist hotels. Even after being heavily influenced by social change, production in many units was intermittent, and occurred in cycles relative to demand, seasonal weather, ritual activities, the lifetime of the potter, and desires for a more attractive vocation. Potters also practiced multi-crafting as part of these cycles to handle economic risk brought on by adverse seasonal weather, economic downturns, and other factors. The paper concludes with some implications for archaeology rooted in insights gained by seeing the rise, fall, and persistence of pottery production units over more than 40 years.

Arnold, Denise (Universidad Mayor de San Andrés, La Paz, Bolivia)

[47] *A View from the Weaver's Fingertips: Gesture and Complexity in the South Central Andes*

This paper traces the gradual acquisition of increasingly complex mental and haptic operations as a girl learns to weave in the Andes. She starts early with fingertip 'synaesthetic' knowledge of fleece thickness and quality as she prepares raw materials and spins them, and the mental-visual knowledge of counting herd animals in her pasturing duties. She passes on to the visual recognition of selection and counting patterns in simple crossed-warp weaves, in belt straps, and then to the integration of digital, manual, visceral, and bodily rhythms in more complex warp-faced weaves, first in small bags, then finally in late adolescence and adulthood in the manta and poncho. I follow the detailed systematization of these learning processes and gestures carried out with weavers before documenting these in film. This shows how increasing complexity articulates simultaneously across gestures, haptic coordinations and rhythms, operational sequences (sensu Leroi-Gourhan) involving the technological and technical artefacts (looms and instruments) with which the weaver engages, the garments she makes, and the structures, techniques, and designs of the warp-faced weaves she applies. The paper locates these processes in three major 'ways' (thakhi) of learning recognised in Andean communal education, and their implications in archaeological work on textiles.

Arnold, Elizabeth (Grand Valley State University), Haskel Greenfield (University of Manitoba) and Aren Maeir (Bar-Ilan University)

[134] *An Examination of Economic Specialization in the Early Bronze Age City of Tell es-Safi Using Isotopic Analysis of Ovicaprine*

Early urban economies during the Early Bronze Age of the southern Levant are often treated as if they relied upon locally-available food resources that were largely produced at the household level, such as the herding of domestic livestock around the periphery or territory of the city-state. In this paper, we investigate whether the pastoral component of economies was a small-scale local affair or was conducted remotely, which would have involved productive specialists such as nomadic pastoralists, through the analysis of carbon, oxygen, and strontium isotope samples of an expanded sample of ovicaprine dental remains from the Early Bronze Age deposits of Tell-es Safi/Gath, Israel. The data are suggestive of spatial separation of animals from the settlement as the results indicate that the animals were reared a substantial distance from the site and only brought into the local territory immediately prior to slaughtering. Based on these data, we argue that pastoral production was a specialized feature of early urban economies in the southern Levant. Food production within early cities was not based on local holdings or small-scale herds by family units and there was a separate pastoral component conducted by specialists at a distance from the settlement.

Arnold, Philip (Loyola University Chicago) and Lourdes Budar (Universidad Veracruzana)

[264] *Building Power: The Teotepac Palace as Materialized Ideology*

Discussions of Classic Period (ca. A.D. 300–900) architecture in southern Veracruz, Mexico generally emphasize patterning in mound-plaza arrangements, with an array of configurations vying for preeminence across the coastal lowlands. Often lacking from these analyses, however, is a more nuanced consideration of the built environment's ideological implications. This paper examines palaces as important reflections of power's materialization in southern Veracruz. Specifically, we consider the palace at Teotepac, a site located along the northern shore of Lake Catemaco in the Tuxtla Mountains. Teotepac's palace is a restricted-access complex that includes both residential and public ceremonial components. The ceremonial complex consists of a large, 3 m-deep sunken patio-like feature that fronts an almost 20 m high pyramid. We argue that this pyramid-patio association is a materialization of the Sacred Mountain-Primordial Water pairing that permeates ancient Mesoamerican ideologies. Moreover, we note that the Sacred Mountain-Primordial Water combination aptly reflects the volcanic mountains and lake waters that constitute Teotepac's natural surroundings. Finally, we consider this expression of ideology at Teotepac in light of architectural manifestations from other Classic Period sites within the Tuxtla region.

Arnold III, Philip J. [216] see Venter, Marcie

Arroyo, Barbara (Museo Pöpol Vuh UFM Guatemala)

[178] *Early Ceramics, Human Mobility, and Interaction: Original Developments of the Pacific Coast in Connection with South America*

Various cultural parallels have been mentioned in the past about the connections between two important regions in the Americas: South America and Mesoamerica. The nature of how this contact took place was a research question that has interested many but is still unanswered. This paper will address the question using information from archaeological fieldwork carried out at sites on the Pacific Coast of Guatemala. Additional information will come from the "invisible" records including paleoecological information and ways of life that might connect both regions in different ways. Considerations of other data sets will be included complementing arguments for the impact of human mobility and relationships between these regions.

Arroyo-Cabral, Joaquín

[16] *New Approaches on the Mexican Quaternary Mammals Studies*

The Mexican Quaternary Mammal Database (MQMD) data are focused on published mammal occurrences in paleontological localities and archaeological sites in México, covering the last 2.6 million years and up to the early Holocene, although some unpublished data from museum collections are included, as well as "grey" literature. More than 15,000 records have been secured from 876 documents. That large database includes records for more than 800 localities and 250 mammal species pertaining to 12 orders, 43 families, and 146 genera. Importantly the same electronic framework was employed that has been used by FAUNMAP working group, including same field species codes; similarly, MQMD is capable to interact with the Mexican Mammals database from CONABIO, having the field species codes for the recent Mexican mammals, too. Derived from initial data analyses, it was realized the great need to improve the radiometric control from the excavations in order to provide detailed data for ecological studies, like those undertaken with stable isotopes or other paleoclimate models or some ancient DNA research. Also, in the past 20 years since we created the original database, new findings have occurred, including the actual presence of human remains. Furthermore, several collaborative endeavors are ongoing to improve the quality and quantity of the data.

[16] *Chair*

Arsenault, Daniel (CELAT-UQAM, Montreal, Quebec) and Serge Lemaitre (Musées Royaux d'Art et d'Histoire de Bruxelles, Be)

[131] *What's New in Canadian Shield Rock Art*

The last few years of archaeological fieldwork in Eastern Canadian Shield have allowed the identification of some new figures in the graphic content of sites already documented by other researchers in Ontario. But this context has led also to the discovery of new rock art sites in this province as well as in Québec. These rock painting sites, but also the new engraving sites found, help more than ever to better understand the variability and complexity of the iconographic themes privileged by the First Nations' ancestors in relation with their worldviews and the symbolic links associated with their sacred landscape. Our paper will discuss the nature and importance of this scientific endeavour, and a few insights will be offered about the possible rock art narratives that can be yielded by those sites.

Arthur, John [6] see Austin, Robert

Arthur, Kathryn (USF St. Petersburg)

[221] *Legacies of Ethiopian Women: Revealing Heritage through an Indigenous Animistic Ontology*

This paper will focus on the importance of including women's legacies and narratives in the heritage of southern Ethiopia. In particular, women's memories reveal the significance of life rituals associated with birth, marriage, and leadership, which served as reminders for illuminating their indigenous ontology Detsa concerning animism, fertility, and prestige. Traces of their life experiences and thoughts are tangible as visible markers on the landscape at Biare Dere, first settlements. Although these spaces and objects embody their engagement between the physical and spiritual worlds, their community action fields and boundaries are pliable, reconfiguring their traces in spatial and material realms.

Aschero, Carlos [139] see Loyola, Rodrigo

Ashby, Leonard [230] see Hurst, Heather

Asher, Brendon (University of Kansas)

[200] *Clovis and Folsom from the Central Plains: Projectile Point Breakage, Distributions, and Material Types as Indicators of Prehistoric Land use and Subsistence Strategies*

Clovis and Folsom artifact distributions, particularly projectile points, are not homogenous throughout the Central Plains. Uneven artifact distributions are in part attributed to diverse land use and hunting techniques that resulted in distinct artifact breakage patterns. Lithic material use and transportation is also unique. These differences are partially driven by changing ecosystems during the terminal Pleistocene. Models of Clovis and Folsom land use are explored to account for the observed spatial patterning in artifact distributions. Other factors, including site visibility and geomorphic processes, collector intensity, recording, and recognition bias are considered.

Ashley, Michael (Center for Digital Archaeology)

[261] *Differential Access for the Ethical Stewardship of Cultural and Digital Heritage through Mukurtu.net*

In July, 2015, the number of federally recognized tribes increased to 567 with the inclusion of the Pamunkey tribe in Virginia. Among other benefits, Tribal Nations have the right to self govern, and as such, the right to determine how best to curate and manage their own heritage and histories. To put this number into perspective, there are currently only 193 member states (countries) in the United Nations, 183 of which voted to recognize the rights of Indigenous Peoples worldwide in 2012 (the U.S. voted against). As we consider models for the long-term curation of digital archaeological data, we take into account the voices of tribal communities and their diverse opinions on the sharing protocols of digital cultural heritage items on the Web. To this end, we have developed Mukurtu.net, the hosted service for Mukurtu CMS 2.0, an open source platform designed specifically to address some of the challenges of the diversity of sharing protocols and archiving for the long-term. In this presentation we will explore how community-based agile software development enables the long-term sustainable sharing and curation of indigenous cultural property through the active participation of the communities and those worldwide who benefit from reciprocal knowledge exchange.

[33] *Discussant*

Ashley, Keith [164] see Murray, Emily Jane

Ashmore, Wendy (University of California, Riverside)

[162] *Upstream, Downstream, Sacred Worlds*

Archaeological study of ancient water management has grown tremendously in recent decades. Vern Scarborough has contributed centrally to advances in this domain, in the Maya area of Mesoamerica, as well as in cross-cultural examinations extending to the U.S. southwest, and more distantly, south and southeast Asia. Even his early concerns with ancient American ballcourts and ballgames link to water, with regard to the watery underworld to which the courts were entry portals. Scarborough's inquiries into water-related ritual landscapes are well known and often richly collaborative. While some of his and others' research involves standing water, such as cenotes or reservoirs, much treats flowing streams and moving water. This presentation explores some of the inferences about ancient practices raised by that work, especially ways in which it leads to rethinking old evidence, including some in my past research.

[53] *Discussant*

Athens, J. Stephen [296] see Rieth, Timothy

Atherton, Heather [110] see Gonzalez, Albert

Atici, Levent [75] see MacIntosh, Sarah

Atkins Spivey, Ashley (College of William and Mary)

[293] *Making Pottery, Constructing Community and Engaging the Market: Colonoware Production on the Pamunkey Indian Reservation*

Colonoware is an important object of the colonial era that continues to invoke debate surrounding the ethnic identity of its makers. However, attempts to tie an "exact" ethnicity to colonoware production dismiss the deep structure of social processes tied to these objects created, used, and sold by both enslaved African American and Indigenous communities. This paper combines archaeological, oral history and documentary research conducted on the Pamunkey Indian Reservation located in tidewater Virginia, to contextualize colonoware as an important feature of Pamunkey life during the nineteenth century. Importantly, in viewing colonoware through the lens of Pamunkey material culture, I argue the object of pottery, and the process of producing it, concretized the central role landscape played in structuring the community's appropriation of the region's market economy. Specifically I explore Pamunkey colonoware production in reference to: 1) The Pamunkeys' existing systems of knowledge surrounding use of the Reservation landscape; 2) The community's innovative appropriation of the region's market economy through the employment of traditional subsistence practices; 3) Contemporary tribal members' perspectives and reflections on their past that I argue are integral to examining the role pottery making played, and continues to play in Pamunkey engagement with the market economy.

Auf der Maur, Christian [147] see Meyer, Sabrina

Ausel, Erica [116] see Schurr, Mark

Austin, Robert (Alliance for Weedon Island Archaeological Research and Education, Inc.), John Arthur (University of South Florida), Wendy Edwards (University of South Florida), Sharlene O'Donnell (University of Florida) and Christina Perry Sampson (University of Michigan)

[6] *Breaking New Ground: Archaeology of Domestic Life at the Weedon Island Site, Florida*

The Weedon Island site is well-known among archaeologists in the southeastern U.S. as the type site of the Weeden Island culture, a mortuary complex shared by geographically wide-spread cultures ca. A.D. 200–900. Recent research (survey, excavation, artifact and faunal analysis, radiocarbon dating) by multiple institutions focusing on the domestic sphere have added new details about the site's history and use during the Archaic, Woodland, and Mississippian periods.

Austin, Haley (The College of Wooster) and Olivia Navarro-Farr (The College of Wooster)

[235] *Ritual Behavior in the Late and Terminal Classic: An Application of Ethnoarchaeology in the Southern Maya Lowlands to Terminal Deposits*

In the Late and Terminal Classic periods (~750–900 B.C.) ancient Maya city centers in the southern lowlands changed in terms of population, political, and ritual climate. These changes resulted in marked emigration, depopulation of various city centers, and the fall of divine kingship. Across the Maya region, archaeologists have encountered heterogeneous surface deposits, many of which are associated with final occupational phases. Various identified as problematic or terminal, I argue these deposits may provide unique insights into ancient Late and Terminal Classic ritual behavior; as such, they may further our understanding of the complex processes associated with collapse. In this poster, I consider ethnoarchaeology as a potential research strategy for examining the archaeology of collapse-era ritual in the Maya Lowlands. I propose studying modern ritual engagement of ancient shrines as a potential analogue for evaluating ancient terminal deposits. I demonstrate how applying ethnoarchaeological methodologies may help address questions about ancient behavior and intentionality.

Austin, Tucker, Carolyn Freiwald (University of Mississippi), Melissa Quartarone (University of Mississippi), Hali Niles (University of Mississippi) and Timothy Pugh (Queens College-CUNY)

[291] *Animal Use at Nixtun-Ch'ich': Preclassic Canids, Postclassic Crocodiles, and Contact Period Cows*

A number of general trends characterize changes in Maya animal use over time. Previous studies have found that remains of dogs are most common in Preclassic contexts, while Classic period elite deposits typically consist mainly of large game, such as whitetail deer. Native species remained important even after the introduction of European domesticated species during the Contact and Colonial periods. Unfortunately, large faunal deposits that span multiple time periods are absent at most Maya centers. We report changing patterns in animal use at Nixtun-Ch'ich', Guatemala based on data derived from excavations of public locations dating from the Preclassic to the Contact periods. While dogs were used preferentially in Preclassic ritual activities, Postclassic deposits included a wider variety of animal species, such as snakes, crocodiles, and small game, and even cows after the transition to the Contact and Colonial periods. Reliance on lacustrine and riverine resources continued during all time periods, but preference for different species shows participation in distinct trade networks or catchments over time.

Aveni, Anthony (Colgate University)

[107] *Night in Day: How Mesoamerican Cultures Respond to Unanticipated (and Anticipated) Eclipse Phenomena*

Effects of the sudden, dramatic inversion of day and night experienced during a total eclipse of the sun have been reported in cultures the world over. How to find meaning in the extraordinary shading, the odd color tones in the landscape produced by the sun's corona, and the changes in animal behavior, not to mention the appearance of stars and planets flanking the black disk that accompanies darkness in the middle of the day? After a brief cross-cultural survey of where eclipse myths find their place in society, we turn to the significance of eclipses in cultures that have developed the capacity to warn of the advent of such phenomena, most notably the Maya.

Aventín Moretti, Milagros [233] see Moralejo, Reinaldo

Avila, Florencia [255] see Echenique, Ester

Avila Peltroche, Mary Claudia, Ali Altamirano-Sierra and Bryan Nuñez Aparcana

[283] *Analysis of Animal Bones in Panquilma and their Relation with Domestic and Ritual Spaces*

During Late periods, the use of domestic animals as camelids and guinea pigs were part of a fiscalized economic system which allowed a better management of faunal resource for consumption. These animal species also had a symbolic meaning in the Andean cosmovision that led them to be used in ritual spaces, along with other animals as canids, amphibians, deers, birds, and felines. In this study, we showed the results of the analysis made on the bone assemblage recovered from the site of Panquilma. We recorded the principal modifications, whether they are cultural as cut marks and termic alterations, or natural as taphonomic processes. After being evaluated and discussed, these characteristics showed a tentative pattern of animal utilization, where the camelids and guinea pigs appear as well as domestic and ritual spaces, while canids and amphibians are exclusively related to ritual and symbolic spaces.

Awe, Jaime J. [179] see Sullivan, Kelsey

Awe, Jaime

[288] *Paying Homage to the Ancestors: The (Preclassic) Cunil Phase Maya of Cahal Pech*

More than 20 years of investigations at Cahal Pech have served to establish that the site has one of the longest sequences of occupation in the Maya Lowlands. First settled at the end of the Early Preclassic period, the settlement gradually grew in size and affluence during the Middle and Late Preclassic periods, and eventually became one of the primary Classic period centers of the upper Belize River Valley. Cahal Pech's rise to prominence, however, was not a product of Classic period achievements. Rather, it developed from the solid foundation established by the site's earliest Preclassic inhabitants. Besides examining the origins of the first settlers of the Belize Valley, this paper also provides an updated and comprehensive description of the Cunil Phase Maya of Cahal Pech.

[288] *Chair*

Awe, Jaime [58] see Morris, John

Ayers-Rigsby, Sara (EBI Consulting)

[287] *Section 106, FCC Guidelines, and Small Project Area Archaeology: Little Footprints can Find Significant Sites*

This paper explores the role of Section 106 compliance in small projects, such as telecommunications facilities, city parks, and fiber routes. Often thought of as less significant by regulatory agencies, state historic preservation offices, and CRM firms themselves, small scale archaeology is capable of identifying national register eligible sites, and can play a critical role in examining areas that have been heavily developed by the private sector and therefore not previously subjected to the 106 process. This paper gathers analytical data from different states to illustrate variances in the rate of identification of archaeological sites by small scale projects versus large scale projects. Additionally, case studies of National Register eligible sites identified by small scale compliance projects, such as the Constance Avenue site (44JC1333) in Williamsburg, Virginia, will be examined. If National Register eligible sites are identified regularly by consultants completing this type of compliance work, what large scale implications does this have for the regulatory framework?

Ayres, William [125] see Levin, Maureece

Azarova, Mayya (UCSD)

[179] *Belizean Jade: Why Such a Rich Periphery?*

This paper addresses the question of the place of Belizean Maya jade artifacts within a broader Mesoamerican context. More specifically, I examine the similarities between Belizean jade and other jade finds in different Maya areas. I discuss why a significant number of major jade finds have occurred in Belize while it is often considered to be on the periphery of Maya culture as well as examining the variations in the iconography of carved images on jade. I draw on evidence of recent finds and research into Belizean jade which is currently in the possession of British Museum.

Baca Marroquin, Ancira Emily (University of Illinois at Chicago) and Clorinda Orbegoso (Pontificia Universidad Catolica del Peru)

[219] *Inca and Local Household Economic Interactions in the Chinchaysuyo, Asia Valley, Peru*

Empires establish large scale interregional interaction networks with their provinces. Along with these large scale networks, pre-imperial small scale local economic interaction networks may continue (endure), diminish (decrease), or intensify (increase). Within this context, Imperial and local economic networks create a more complex web of interactions capable of being examined at the household level. In the Chinchaysuyo, the Inca conquered several coastal groups and established a range of different economic interactions with them. My research focuses in the Asia Valley, which unlike the near Chincha or Cañete Valleys, appears like a modest region with scant resources of political-economic interest for the state. Nevertheless, Inca-era settlements are ubiquitous throughout the valley. Using statistical SPSS analysis, I examine the distribution and consumption of Inca and local ceramics collected from household contexts of the Asia Valley, as a means to explore and discuss the nature of political and economic relationships established between the Inca state and distinct social segments (elite and non-elite) of the valley communities.

Backhouse, Paul (Seminole Tribe of Florida)

[16] *A Landmark Career: The Professional Legacy of the Lubbock Lake Landmark Program*

For more than 40 years, the Lubbock Lake Landmark Regional Research Program has provided an immersive participatory environment for students to actively engage with and understand the past. The interdisciplinary nature of the investigations and rich archaeological setting of the Landmark itself have attracted participants to the program from across the globe. From inception the program has followed an apprenticeship rather than traditional field school

model. For many of the hundreds of alumni the Landmark represents a boot camp which taught them how to work and most importantly, to think, as an archaeologist. This paper evaluates the success of the program, its pedagogy, and impact to the profession as measured through an analysis of the career paths of those who choose to participate.

[203] *Discussant*

Badillo, Alex [176] see Burt, Amanda

Bahuchet, Serge [295] see De Maret, Pierre

Bailey, Kassi (University of Arizona)

[184] *The Town Mouse and the Country Mouse: Emergence of Pest-Host and Commensal Relationships at Aşıklı Höyük, Turkey*

The objective of this poster is to present an overview of the emergence of pest-host and commensal relationships that emerged between humans and microfaunal species over the course of approximately 1,500 years at the Pre-Pottery Neolithic site of Aşıklı Höyük. My research is focused on the investigation of the frequency and taphonomic contexts of microfaunal remains in a formative village setting. Co-evolution between humans and plants and animals occurred as feedback systems developed because humans altered the environmental structure in which these microvertebrates were living or could easily invade. Sedentism, in particular, led to the development of new habitats for small animals and fast-growing plants within and around village sites, which had a powerful impact on the proximate biotic environment. Modifications to this environment may have contributed to the formation of micro-habitats distinct from the surrounding area. Rodents particularly may have been attracted to the disturbed sediments of human settlements and to concentrations of food and the presence of nesting sites. This presentation will explore the potential factors that may have attracted different microfaunal species to inhabit human-occupied sites.

Bailey, Doug (San Francisco State)

[248] *Discussant*

Bain, Allison (Université Laval, Québec, Canada), Sophia Perdikaris (CUNY Brooklyn), Rebecca Boger (CUNY Brooklyn), Amy Potter (Armstrong State University) and Reginald Murphy (Antigua and Barbuda National Parks)

[100] *Provisioning Antigua and Beyond: How Herding and Farming Transformed Barbuda, West Indies*

The island of Barbuda was farmed by English settlers from the 1660s onwards. The Codrington family of England held the lease to the island from the 1680s–1870, and they introduced a variety of plant and animal species, some of which continue to thrive on the island. Sugar cane was never grown on this dry, low lying island and instead, lime and charcoal were produced along with other subsistence crops for export. Herding became an important part of the economy and, as a result, water management transformed elements of the landscape which continue to be used by the residents of the village of Codrington. Archaeological surveys and intermittent excavations, combined with recent environmental and palaeoecological analyses suggest the extent of Barbuda's transformation since the seventeenth century. Results of recent research will be discussed alongside an examination of current environmental challenges faced by the local population.

Bain, Allison [100] see Perdikaris, Sophia

Baires, Sarah

[108] *Constructing Narratives: Archaeology's Relationship with the Ontological Turn at Cahokia*

The goal of archaeology, rigorous in its method and theory, is to reconstruct past practices and events. Our pre-conceptions, knowledge, and training channel our analyses through varying theoretical lenses. These perspectives provide context within which to hypothesize about the past, creating narratives about human relationships with the environment, materials, places, and practices. While these theoretical perspectives add nuance and structure to archaeological analyses they sometimes miss, ignore, or appropriate alternate perspectives and theories. In this paper, I examine the recent ontological turn in this process of constructing archaeological narratives in the context of Native North American archaeological sites. The ontological turn, no doubt, changed our engagement with Native North American history, but are we—as predominantly Western social scientists—claiming ownership of theories that were (and are) realities for many of the communities we 'study'? Using as a case study the relationships between pre-columbian Cahokians and their landscape, I explore how ontological theories shape our interpretations of this Native North American city. In examining the status of the ontological turn at Cahokia, I challenge my own relationship with relational theory questioning the application of a Western-derived theoretical movement to accurately engage with a Native American past.

[108] *Chair*

Baires, Sarah [112] see Laubach, Amber

Baitzel, Sarah (UC San Diego)

[172] *Color, Structure, and Society in the Tiwanaku State*

In the Andes, weaving and wearing cloth are essential for shaping identity and social relations. The weavers of the south-central Andean Tiwanaku state (Middle Horizon period A.D. 500–1100) possessed knowledge of plant and animal fibers, weave techniques, dyes, and iconography which allowed them to produce a wide range of textiles, from the monochrome cloths of daily life to the vibrantly colored tapestries. Examining textile evidence from burials at the provincial center of Omo M10 (Moquegua, Peru), this study aims to understand how color choices and patterns related to the structure and design not only of Tiwanaku textiles, but also society. How did the range of natural and dyed colors figure into the layout of warp-striped or tapestry garments? How did concepts of complementarity and dualism, which were central to the structure of Tiwanaku society, influence the color and structure choices involved in the different qualities of cloth manufacture? By integrating new data on color and structure from provenienced Tiwanaku textiles with current archaeological models of social organization and identity in the Tiwanaku state, I hope to shed new light on the role and importance of color in the material practice of the ancient Andes.

[172] *Chair*

Baker, Joe

[208] *Chair*

Baker, Joe [208] see Peresolak, Katherine

Balanuario Granados, Sandra [256] see Velásquez García, Erik

Balázs, Ádám [149] see Párditka, Györgyi

Balcarcel, Beatriz [59] see Hansen, Richard

Balco, William (University of North Georgia) and Michael J. Kolb (Metropolitan State University of Denver)

[271] *Evidence for Roman Glass Production in Salemi, Sicily*

Evidence for the production of Roman glass artifacts in western Sicily remains difficult to identify. The fragile nature of glass artifacts and the frequency with which glass could be recycled into new glass artifacts contributes to a general lack of evidence concerning its ancient production. Excavation of a Roman water cistern in Salemi, Sicily, however, preserved evidence of the local manufacture of glass artifacts. Following its abandonment, the cistern was filled with refuse from the nearby structure, including glass fragments, droplets, and other waste glass. This paper explores the evidence for Roman glass production at Salemi. An analysis of this evidence suggests the presence of a skilled craftsman operating at the site and attests the wealth of the household associated with this feature.

[271] *Chair*

Balco, Jr., William [81] see Bernstetter, Jessica

Balen, Jacqueline [146] see Zavodny, Emily

Ballester, Benjamín (ICIIS. Centro Interdisciplinario de Estudios Interculturales e Indígenas. PUC), Estefanía Vidal (Department of Anthropology, University of Chicago) and Francisco Gallardo (ICIIS. Centro Interdisciplinario de Estudios Inter)

[76] *Architecture and Monuments as Territorial Markers among the Hunter-Gatherers of the Pacific Coast, Atacama Desert (Northern Chile)*

Architecture, as a material device that is perceived and experienced, involves the creation of spatial and visual signatures within a landscape, effectively connecting social groups and territories. In this paper, we explore the role of architecture and monuments in processes of territorialization, land tenure, and the use of space among hunter-gatherers of the Pacific coast in the Atacama Desert, Northern Chile. Between 7,000 to 1,000 B.P. these groups developed diverse ways of making and using buildings through different modes of designing and constructing spaces, including shifts in the location of settlements, modes of organizing labor, changes in building materials, and different burial practices. Our framework considers changes in the architectural landscape and its monumentalization in order to address the ways in which this technology was used as a medium for establishing and reproducing social relations and transforming ecologies through values, norms, experiences, and affects.

Balos, Angelica [24] see Osterholtz, Anna

Baltus, Melissa (University of Toledo)

[108] *Vessels of Change: Everyday Relationality in the Rise and Fall of Cahokia*

By replacing representational thinking with a relational perspective, archaeologists hope to better understand the past-as-lived and experienced. Here I seek to locate the relational in the "mundane," with a consideration of pottery production, use, and deposition as part of the many changing relationships associated with the urbanization and abandonment of the precolumbian city of Cahokia. These relationships include potters as well as potters, engaging humans and non-humans, in the shifting array of social agents throughout the life of a Cahokian vessel. New relationships are formed in deposition, especially among vessel portions that are intentionally deposited in the wall trenches of certain buildings, in posts, or as foundation or termination deposits in refuse pits. New vessel forms, production techniques, and paste recipes are associated with moments of transformation at Cahokia, suggesting relationships with and through pottery were actively entangled in the broader social milieu. Simultaneously, this paper is self-critical, asking whether we begin seeing relationality where perhaps it was not conceptualized or experienced in the past. I explore some of the problematic aspects of engaging with a relational ontology as filtered through western archaeological theory by critically examining the utility and validity of such a project.

[108] *Chair*

Bamforth, Douglas

[16] *Discovery Bias, Excavation Bias, Clovis Diet, and Archaeological Mythmaking*

The myth of Paleoindian big-game specialization has deep roots in our field. None of these roots run deeper than for the Clovis Period, where the vision of humans armed with stone-tipped spears attacking animals the size of extinct elephants has enchanted the public and professional imaginations almost equally. But issues of differential site discovery and investigation run equally deep, and this is especially so for Clovis archaeology. Ancient archaeological sites left by mobile hunters can be hard to find, and the bones of large animals typically attract far more attention than sparse scatters of unmodified flakes. This paper examines the processes of discovery for the set of sites that comprise the Clovis archaeological record on the Great Plains and Southwest, with

two particular issues in mind. First, how the presence of large mammal bone has affected decisions to excavate sites and, second, how the kinds of sites we are likely to find by excavating around large mammal bone affect our ability to generalize about Clovis ways of life.

Banks, Kimball (Metcalf Archaeological Consultants Inc. & Combined Prehistoric Expedition Fdtn), J. Signe Snortland (Combined Prehistoric Expedition), Linda Scott Cummings (PaleoResearch Institutie), Donatella Usai (ISIAO and CSSes-Italy) and Maria Gatto (Aswan-Kom Ombo Archaeological Project & University)

[177] *Ye Olde Fishing Hole: A Late Paleolithic Fishing Camp, Wadi Kubbaniya, Egypt*

WK26 is a Late Paleolithic occupation consisting of a sparse lithic scatter, hearths, postholes, storage features, a possible living floor, and faunal remains in which fish predominate. The site lies on the west side of Wadi Kubbaniya, north of Aswan, Egypt, and opposite the Late Paleolithic dune field the Combined Prehistoric Expedition investigated in the late 1970s and early 1980s. Radiocarbon dates and stratigraphic position indicate that WK26 dates to the end of the Late Paleolithic. Few contemporaneous sites have been located along this stretch of the Nile Valley. The stratigraphic position and composition of the cultural material, features, and faunal remains offer insight into settlement-subsistence at the end of the Late Paleolithic in Egypt, and suggest that the site may have been a dry-season fishing camp.

Baquedano, Elizabeth (University College London, Institute of Archaeology)

[47] *Divine Hands: The Teotihuacan Great Goddess*

Teotihuacan was the painted city. A key iconographic motif in the murals of residential compounds, such as Tetitla, is the Great Goddess, often shown in the act of hand-scattering. A variety of substances such as grain, liquids, and precious, green stones are pictured falling from the Goddess' open palm. The extensive corpus of representations of the goddess' hand-scattering identifies the hand, and in particular the female hand, as a locus for divinity.

The suggestion that the agency of the great goddess resides in her hands is based on the observation that the hand is the one part of the Goddess' body which performs actions. The repeat border design of Mural 1, Tetitla, shows the disembodied hand of the Goddess scattering grain and in between each hand is a Flat Two-Dimensional Knot. This knot is an important Classic Period Maya motif found on Maya monuments, architecture, and ceramics. The juxtaposition of the motifs, hand and knot, is proposed as deliberate and therefore meaningful. Absent from the repertoire of Teotihuacan motifs, this knot motif offers a unique opportunity to re-evaluate the meaning of hand-scattering at Teotihuacan but also the presence of important Maya iconographic motifs at this great city.

[15] *Discussant*

[47] *Chair*

Bar Yosef, Ofer [173] see Wu, Xiaohong

Baram, Uzi (New College of Florida)

[10] *Heritage Tourism and the Global Economy: The Values of Archaeology in the Experience Economy*

Recognizing the intellectual, social, and political economic terrain for archaeology is crucial for effective and meaningful work in the present, archaeologists have reflected on the colonial, imperialist, and nationalist context for research and representations of the material past. Since the 1990s tourism has grown as a concern, particularly as heritage tourism has expanded greatly, offering opportunities for preservation and representation of the past. Through multiple examples, this poster includes the dynamics between economic development and historic preservation. The term value is explored in terms of the financial and the educational.

For talented story-tellers, the past can be conjured up and presented through thrilling narrative arcs and vivid imagery. The result can make the listener feel like they are in an ancient place. But the audience listens, with only awe as the result. With expanding digital technologies, the archaeological past can be animated. Students can immerse themselves in reconstructed buildings and landscapes and move through ancient places, examine material culture from multiple angles, and even engage in games that educate on the lives of past peoples. The active learning facilitates innovative interpretations even while stressing the significance of rigorous detail-oriented analysis of archaeological and archival/ethnographic data. Examples come from programs for primary school aged children based on historical archaeology projects on Florida's Gulf Coast. The digital presentations for the Cuban fishing rancho industry and early nineteenth-century marronage offer a past in a part of Florida often assumed to have little or no history. The goal of these digital avenues meets the ethic of communicate archaeological interpretations of the past, introducing children and adults to a cosmopolitan past.

Barba, Luis [129] see Mejia Ramon, Andres

Barber, Sarah (University of Central Florida) and Arthur Joyce (University of Colorado Boulder)

[53] *Gathered for the Feast: Community and Polity Ceremony in the Lower Río Verde Valley*

Among Payson Sheets' many contributions to archaeological method and theory is a long-term commitment to examining the actions and relationships of commoners. Taking inspiration from his work at Cerén on community ceremony, in this paper we examine collective ceremonial practices at two Terminal Formative period (C.E. 100–250) sites in the lower Río Verde valley of Pacific coastal Oaxaca, Mexico. The site of Yugüe, like Cerén, was a small site that was located only four kilometers away from a regional political center—in this case, the site of Río Viejo. Middens located in public spaces at both Yugüe and Río Viejo attest to collective food consumption in conjunction with ceremonial activity. While lacking in the remarkable preservation that characterizes Cerén, the Yugüe and Río Viejo middens offer an opportunity to compare the community ceremony of commoners with that of the inhabitants of an urban center. Our results incorporate contextual, ceramic, faunal, and botanical remains to explore the degree to which commoner ceremony at Yugüe was entangled with more encompassing ritual practices at Río Viejo and consider the implications of these entanglements for the constitution of regional political affiliations.

Barber, Sarah [117] see Joyce, Arthur

Barber, John (University of Edinburgh)

[119] *Use of Raw Energy Data in the Estimation of the 'Cost' of Building Iron Age Brochs in Scotland*

Iron Age brochs, drystone-built towers unique to Scotland, are typically 18 m in external diameter, 9 m internally, and 12 m to 14 m high. Calculation of the volume of stone required for the construction is relatively simple. Calculation of its standard bulk density, only marginally more difficult so that the mass of stone involved can be calculated with confidence. The calculation of the number of kWhs of energy required to quarry, lift move, horizontally and vertically and place into the monument can similarly be measured. The continuous power rating of a fit human being is a mere 0.6 kWh per diem—its 'living cost,' just less than three times as much, is not available for labour. From these data, a minimum energy cost of construction can be calculated based only on physical parameters, and the labour force size/duration-of-build ratio can be derived, assuming 100 percent efficiency in the human agents. This approach is less subjective than, for example, guessing the person-hours and length of a standard working day, albeit that it is not totally free from the potential for such biases. At the very least, its uniform methodology facilitates comparison between brochs in terms of their energy costs and thus of their social cost/values.

Barbery, Ennis [191] see Hambrecht, George

Barbier, Brian (University of California, Santa Barbara)**[110]** *Bit by Bit: Olivella Bead Production during the Middle Period on Santa Cruz Island*

Beads made from the Olivella biplicata shell were used as both decoration and a form of currency by the Chumash living in the Santa Barbara Channel region, and large quantities have been recovered from many prehistoric sites throughout western North America. Many of the bead types were made from different portions of the shell and conform to standardized shapes and sizes. A number of these types have distinctive spatial and temporal distributions in the archaeological record, and based on quantities and associations, present an opportunity to understand wealth, status, and regional exchange patterns. Despite extensive research into shell bead production and exchange during the Late Period, less attention has been given to the role of Olivella bead manufacturing during earlier times. This study assesses bead production evidence, including shell detritus, drills, and other tools to better understand the methods and intensity of Olivella bead manufacturing during the Middle Period. By applying a bead detritus typology to the production remains at several Middle Period sites on Santa Cruz Island along with supporting experimental studies, I seek to quantify the intensity of bead production occurring at this time, and compare these findings to studies of Late Period bead manufacturing sites.

Barbosa, Antonia (PPGA / Universidade Federal do Pará - Brasil)**[263]** *Arqueoastronomy and Built Landscape: The Spatial Orientation of Geometric Enclosures in Western Amazonia*

Geometric enclosures found over a 400 sq km area in western Amazonia were built in patterned ways that involved depth, width, and morphology of monumental ditches excavated in a clay soil matrix. Pattern eventually included care for solar orientation. A study of 419 geometric enclosures showed that around 60 percent of them were clearly oriented according to the sun's trajectory and its maximum distance from the Ecuador, e.g., the solstice. One of the working hypotheses is that the agricultural calendar guided yearly festivities, therefore, the geometric enclosures were mostly used for ritual activities. This research shows new interpretive possibilities for the study of such sites which functionality remains not completely understood.

Bardolph, Dana (University of California Santa Barbara), Brian Billman (University of North Carolina, Chapel Hill) and Jesus Briceno (Ministerio de Cultura, Peru)**[122]** *Food in the Contact Zone: Reimagining Highland-Coastal Contact in the Prehispanic Moche Valley of North Coastal Peru*

In this paper, we explore migration and culture contact in the prehispanic Moche Valley of north coastal Peru, specifically through the lens of domestic foodways. During the Early Intermediate Period (EIP, 400 B.C. to A.D. 800), serrano groups from the neighboring highlands colonized many principal river valleys along the Peruvian north coast; however, the nature of highland colonization remains poorly understood. Scholars have envisioned diverse interactions between locals and nonlocals, from trade and exchange of marriage partners to warfare, coercion, and slavery. Recent analysis of excavated materials from EIP highland and coastal domestic habitation sites in the Moche Valley affords a closer look at this historical process. By employing paleoethnobotanical data to examine the organization of foodways, we have the potential to shed light on myriad social processes related to the negotiation of ethnic identities, gender relations, and domestic labor in the more distant as well as recent Andean past.

Barfod, Gry [13] see Van Gijsegem, Hendrik

Barker, Andrea [40] see Kamp-Whittaker, April

Barker, Alex (University of Missouri)**[58]** *Discussant***Barker, Claire (University of Arizona) and Samantha Fladd (University of Arizona)****[64]** *Miniature in Everything but Meaning: A Contextual Analysis of Miniature Vessels at Homol'ovi*

Within the archaeological literature there are several studies of miniature vessels that have attempted to explain the presence of these unique artifacts in prehistoric Puebloan society. The two most common hypotheses are that these pots were made by inexperienced potters while learning their craft, or they were produced by expert ceramic artisans and served a ritual function. These analyses have largely depended on assessing the skill with which miniature vessels were produced. The results of these studies have been inconclusive, finding evidence of both skilled and inexpert production of miniature vessels. This research attempts to further our understanding of the role miniature vessels played in Puebloan culture through a synthetic analysis which considers both craft mastery and depositional context. An expert in the art of ceramic manufacture may make a vessel for utilitarian purposes; similarly, a vessel produced by an amateur may be used for ritual. Thus, it is crucial to understand the ways in which use and discard also imbued an object with meaning. For this reason, we suggest that considering the context in which a miniature vessel was deposited may provide a more refined understanding of the function(s) these artifacts served in prehistoric Puebloan society.

Barnard, Hans (Cotsen Institute of Archaeology at UCLA) and Ran Boytner (Institute for Field Research)

[92] *The Development of Andean Textile Dying Technology*

Textiles have always had great social significance in the Andes. They were used to express identity and power as well as position and function within society. Intensive investment in textile technologies yielded some of the best such artifacts of the ancient world. While spinning and weaving produced fine garments, it was colors—achieved primarily through the use of brilliant organic dyes—that constituted the major visual qualities of Andean textiles. A limited number of studies exist that investigate Andean dye technology, its development and the changes that resulted from the domestication of dye plants and insects, new trade networks and the subsequent exchange of designs and ideas. We present data from hundreds of textiles to cover a broad temporal and geographical range. Some of the data summarize published analytical work on Andean dyes, but most result from our work in the past two decades. We use the entire dataset to explore changes in dying preferences and technologies, and their relationships to general cultural and technological traits across the ancient Andes.

Barnard, Hans [177] see Wendrich, Willeke

Barnes, Ben [266] see Sievert, April

Barnett, Kristen (The University Of Montana), Anna Prentiss (The University of Montana), Sarah Nowell (The University of Montana) and Ethan Ryan**[124]** *Community Archaeology on the South West Coast of Alaska: TAPP*

The Togiak archaeology and Paleo archaeology project is a combined effort between the Togiak community and the University of Montana to renegotiate the pre-colonial and historic understanding of the Old Togiak site in southwest Alaska. Preliminary results from the first field season challenge our current understanding of the site incorporating community driven research and knowledge. This paper serves to expand our knowledge and understanding of the region and propose a new baseline in community indigenous research.

[186] *Discussant*

Barnett, Kristen [171] see Prentiss, Anna

Baron, Joanne [88] see Freedline, Joshua

Barreto, Cristiana (Museu de Arqueologia e Etnologia)**[23]** *Fractal and Extended Identities: The Dynamics of Ceramic Styles from Monte Alegre, Lower Amazon.*

This paper presents the initial results from analysis of ceramic materials from open air sites in Monte Alegre, a region that has long been known for abundant and impressive rock art sites, and for the very early human occupation at Pedra Pintada cave excavated by Ana Roosevelt 20 years ago. A new research project in the area with a broader regional approach so as to explain the enormous diversity of sites, has included now sites from a more recent occupation beginning around the twelfth century A.D. Despite the proximity of the large Santarém chiefdom, and influences from Santarém ceramic styles, Monte Alegre ceramics nonetheless exhibit a particular local pattern permeated by elements from both Santarém (and Konduri) styles but, more importantly, by what seems to be a unique cross-cultural stylistic complex in the Lower Amazon and Guianas, now being identified as the Koriabo complex. Based on analysis of ceramics from this more recent period, we discuss relations between the longevity of human occupation in the area, the emergence of persistent ceramic traditions, and the dynamics of stylistic flows and interaction spheres suggested by studies of materials since the twelfth century A.D. across the Lower Amazon region.

[23] *Chair*

Barrett, Linda R [197] see Matney, Timothy

Barrientos, Gustavo [207] see Belardi, Juan

Barrios, Edy (CUDEP-USAC)**[212]** *Friends, Foes, or Uneasy Acquaintances? Copan's Relationship with its Neighbors*

A recent mapping and excavation project in the Copan Valley is taking a second view of communities outside of the Copan Pocket. The goal of this project is two-fold, one, to understand the environmental context of these sites, and two, to understand the relationship between them and the powerful leaders of the Copan Acropolis. It is unlikely that the kingdom of Copan could have reached its apogee without the support and subordination of its closest neighbors, a diversity of towns, villages, and small groups spread throughout the fluvial pockets surrounding Copan. This talk specifically discusses Rio Amarillo, Quebrada Piedras Negras, Agua Sucia, and the sites of Finca del Cisne.

[212] *Chair*

Barrios, Edy [212] see McNeil, Cameron

Barse, William (Smithsonian Institution)**[279]** *Nericagua, Corobal, and the Upper Orinoco Ceramic Sequence*

This presentation reviews the relatively unknown ceramic complexes of Nericagua and Corobal defined in the late 1950s by Clifford Evans and Betty Meggers, currently housed in the Smithsonian Institution curation facilities. The range of variation in ceramic vessel shapes and their decorative motifs of these two complexes will be compared to neighboring ceramic assemblages in the northern Tropical Lowlands to assess broader stylistic correlations, e.g.,

between Arauquin phases in the Llanos of Venezuela and the Monou-teri ceramic complex in the Upper Orinoco River drainage originally defined by Erika Wagner. Evidence for paleosol correlations with late ceramic assemblages further downstream will also be explored. Seriation data from test pit excavations suggest that many of the Nericagua sites and several of the Corobal sites were excavated from buried paleosol contexts. Potentially, such buried paleosols can be linked to well-dated allogenic paleosol contexts with Arauquin ceramics located downstream from the Atures Rapids that are present in a number of sites along the Orinoco River.

Barton, C. Michael (Arizona State University)

[95] *Discussant*

Barton, Loukas [180] see Morgan, Christopher

Barton, Loukas (University of Pittsburgh), Christopher Morgan (University of Nevada, Reno) and Bayarsaikhan Jamsranjav (National Museum of Mongolia)

[180] *Stone Tool Typology and Chronology from Late Pleistocene to Middle Holocene Northwest Mongolia*

Understanding hunter-gatherer adaptations to northern latitude marginal environments such as the Uvs Lake Basin of northern Mongolia is crucial for understanding social historical processes such as the transition to herding and pastoralism. To date, however, the archaeological patterns of hunter-gatherer life in this part of the world are notoriously ill-defined, on the one hand because so little attention has been given to them, and on the other because buried, stratified sites have been so elusive. Here we report a preliminary account of stone tool typology from the late Pleistocene to the middle Holocene of the Uvs Lake Basin, northwest Mongolia, derived from systematic regional surface survey anchored to an absolute chronology from two stratified sites at Bayaan Nuur, a small, spring-fed lake on the southern margin of the world's northernmost dune desert.

Bar-Yosef, Ofer (Harvard University)

[211] *Making Stone Tools Ignoring Environmental Changes*

The common assumption that environmental shifts force humans to change the technology or types of their stone tools is examined on the basis of the Paleolithic of mainland China. During long periods of time humans made core and flake industries from local hard rocks whether various types of quartz and even flint. This presentation will summarize the Pleistocene sequence of China stressing the traditions of producing the same lithic industries. Rare examples of bifacial assemblages will demonstrate that there was no 'Movius line,' as suggested already by several scholars. Instead, the question of why the same core and flake industries prevail over long periods, including the early millennia of the Upper Paleolithic, are rarely questioned. Stable demographic aspects are examined and are tested against the better known sequence of prehistoric cultures in western Eurasia.

Basanti, Dil (Northwestern University)

[215] *Stone Bodies and Second Lives: Preserving the Person in Ancient Ethiopia*

Aksum, the capital of an ancient northern Ethiopian kingdom (50–700 A.D.), is well known for its elaborate funerary stelae, the largest of which were carved in the impression of multi-storied "houses." Prior to a widespread conversion to Christianity, the Aksumites buried their dead in kin-groups either in tombs or in shafts that cluster around the stelae. Human remains are often burned, fragmentary, disarticulated, and jumbled, creating an impression of ephemerality that contrasts with the permanence of the elaborate stelae and tombs. Bowls at the bases of stelae indicate the performance of ancestor veneration rites that gave deceased family members a continued presence in memory. This suggests a personhood rooted in the family, and this personhood was codified through the house symbolism as a second "body" for the family in death—one that may have had its own life-span. In this way, the Aksumites focused their burial practices around those rituals and symbolisms that allowed families to preserve their relationships with each other past the boundaries of life and death.

Basiran, Alper and Cevdet Merih EREK (Gazi University)

[184] *The Prehistoric Cultures in the Turkish Republic of Northern Cyprus*

The Cyprus Island is the third largest mainland in the Mediterranean, and it should have been connected by near lands in prehistoric times. Some evidences of this situation obtained from a few prehistoric settlements and geomorphological proof. The new researches have been started by assistant prof. Cevdet Merit Erek behalf of Gazi University in Ankara, from Turkish Republic. The new researches were carried out by permission of The Turkish Republic Government of Northern Cyprus. Major assistance of our researches was provided by Fuat Azimli, Director of the Department of Antiquities. We should like to note that the cooperation extended to us by Turkish Government officials and all Northern Cyprian.

Bassett, Hayden (Department of Anthropology, College of William & Mary)

[126] *Housing Occupation and Constructing Race in Plantation Jamaica: A Comparative Archaeology between Two Slave Villages at Good Hope Estate*

The "slave village" occupies an important place in Caribbean archaeology, though one in which the internal variation and dynamics of a village have yet to be thoroughly addressed. This has resulted in an essentialized picture of the "enslaved community" as a single entity. However, recent excavations at Good Hope estate, an eighteenth/nineteenth-century sugar plantation in Jamaica, have demonstrated greater internal variation of experience, revealing that the plantation's enslaved community was divided amongst two village sites. While most of the 490-person enslaved labor force lived in a central primary village, a second smaller village housed the plantation's 22 enslaved domestic servants. For the house domestics of Good Hope, and their small dedicated village, this represented the majority of the plantation's so-called "mulatto" population, segregated from what was categorized as the "negro" population by the eighteenth and nineteenth-century planter class. In this paper, I compare archaeological and architectural evidence from the two village sites to test if a material-basis for social inequality existed in relation to occupational and racial grouping within Good Hope's enslaved community. Ultimately, these findings illustrate the significant role of built environments in constructing and sustaining difference and distance between enslaved people.

Bates, Lynsey (DAACS), Elizabeth Bollwerk (DAACS), Leslie Cooper (DAACS) and Jillian Galle (DAACS)

[7] *Ceramic Investment by the Enslaved Community at The Hermitage, TN*

For the first time, archaeological data from excavations at The Hermitage, Andrew Jackson's nineteenth-century cotton plantation near Nashville, Tennessee, are being made available to researchers through the Digital Archaeological Archive of Comparative Slavery (DAACS). These assemblages are associated primarily with enslaved laborers who lived in three Antebellum quartering areas on the plantation. Building on previous research about slaves' acquisition of non-provisioned goods, this poster interrogates one subset of these data, imported ceramics, to assess the distribution of goods across the spatially-divided enslaved community. First, we establish a plantation-wide chronology using correspondence analysis to date deposits from the mansion backyard, outlying field quarters, and the First Hermitage, the earliest settled area of the plantation. We then review how specialized forms and decorated vessels varied across time and space between the three domestic areas, and whether this variation reflects relative investment in market goods.

Bates, Brian (Longwood University) and Mary Farrell (Longwood University)

[8] *The In-Crowd: Implications of Notable Village Features at 44CH62—The Randy K. Wade Site*

Located in the southern region of the Virginia Piedmont, the Late Woodland Randy K. Wade site (44CH62) was initially identified as a community influenced by Tidewater culture groups. In recent years, the discovery and analysis of a boundary ditch feature, fence line, and three large central post features have impacted the interpretation of the site. It is now believed that the Wade Site exhibits characteristics influenced by Mississippian culture groups in addition to a Tidewater influence. This poster investigates the archaeological evidence that indicates a conscious choice by the Wade site's prehistoric occupants to integrate two different cultures in their village layout and material culture.

Batista Barbosa, Jordana [167] see Silva, Rosicler

Battillo, Jenna (Southern Methodist University), Karen Lupo (Southern Methodist University), Jaime Mata-Miguez (University of Texas at Austin), Rick W.A. Smith (University of Texas at Austin) and Deborah A. Bolnick (University of Texas at Austin)

[64] *Botanical and aDNA Analysis of the Dietary Contents of Human Paleofeces from Turkey Pen Ruin, Utah*

Over the last few decades archaeologists and paleontologists have made great strides in paleofecal analysis, not the least of which was the application of aDNA testing. However, most aDNA analyses of paleofeces have focused exclusively on studying human populations and researchers have largely ignored the potential for using this tool to study dietary constituents themselves. In this study, we present analyses of aDNA from both the faunal and floral dietary constituents of 20 Basketmaker II (BMII) paleofecal samples from Turkey Pen Ruin, Cedar Mesa, Utah. Palynological data in concert with animal and plant aDNA, yields insights into seasonal resource use and the individual diets of the ancient inhabitants of Turkey Pen Ruin. Importantly these data show that BMII populations were consuming animal protein from a wide variety of large animals (including turkey), which conflicts with previous ideas about BMII diet at this site. We hope that with this data we will be able to paint a more comprehensive picture of Basketmaker II diet at Cedar Mesa, and in particular help to form a better understanding of the ways in which people in the Southwest supplemented the incomplete nutrition in maize prior to bean horticulture.

Battle-Baptiste, Whitney, Elizabeth Chilton (University of Massachusetts Amherst) and Elena Sesma (University of Massachusetts Amherst)

[10] *"Back to the Soil": Community Archaeology and Heritage Tourism in Eleuthera, Bahamas*

In 1994, UNESCO launched their "Slave Route" project, with the aim of "contributing to a better understanding of the causes, forms of operation, issues and consequences of slavery," and to "highlight the global transformation and interactions that resulted from this history." Although the past several decades have seen a great deal of study around both U.S. and Caribbean plantations, many of these research projects are designed to address archaeological research questions rather than some of the pressing problems faced by descendant communities concerning their heritage, or the critical, global questions suggested by UNESCO. This poster outlines a research project that was initiated in collaboration with descendants of slaves of the nineteenth C Millars. Descendants of enslaved families occupied the plantation area well after the post-emancipation period and many contemporary southern Eleutheran communities trace their lineage to the slave population of the Millars Plantation. The archaeological project emerges out of sustained community collaboration of several years, ethnographic data, oral histories, and interviews regarding the nineteenth century plantation landscape. Under the auspices of the Center for Heritage & Society at UMass Amherst, this will be an important centerpiece for the ongoing project on heritage and sustainable development on the island.

[221] *Discussant*

Bauer, Brian, Javier Fonseca Santa Cruz and Miriam Araoz Silva

[198] *Excavations at Vilcabamba*

After the Incas failed to regain control of their capital city from the Spaniards in 1536, many Inca loyalists withdrew into the Vilcabamba region. Over the next 40 years of organized indigenous resistance to Spanish rule, much of the Inca royal court was centered in the town of Vilcabamba and a host of critical events occurred in the region. Despite the important role that the city of Vilcabamba held in the final years of the Inca Empire, there have been few archaeological projects aimed at understanding its layout or the activities that occurred within its boundaries. This paper presents the results of recent excavations in the city and the recovery of new information concerning the final decades of Inca rule in the Andes.

Bauer-Clapp, Heidi (University of Massachusetts Amherst)

[10] *Heritage Values and Violent Pasts: A Case Study to Evaluate Resources to Promote Ethical Treatment of the Dead*

Increasing interest in a heritage of violence and dark tourism raises new questions about social, political, ethical, or economic dimensions of heritage values. In this poster I present a case study of St. Helena to examine diverse interests in violent heritage, in this case the island's little-known use as a refuge for captive Africans liberated from illegal slave vessels. I evaluate the efficacy of existing resources such as codes of ethics and heritage policies in balancing potentially competing interests, with particular attention to complex agendas and consequences that arise when human remains become the object of heritage projects.

Baumann, Timothy (University of Tennessee) and Gary Crites (McClung Museum, University of Tennessee)

[225] *The Age and Distribution of the Common Bean (*Phaseolus vulgaris*) in Tennessee and the Southeastern U.S.*

Arriving after A.D. 1000, the common bean (*Phaseolus vulgaris*) was the last domesticated plant to be adopted in the prehistoric eastern Woodlands. Beans were combined with corn and squash to create the "three sisters" agricultural system. Recent scholarship has argued that the earliest beans entered the eastern U.S. from the lower Plains and through the Great Lakes. When and how beans entered into the southeastern U.S. is not clearly understood

because very few beans have been directly dated. New radiocarbon dates of beans from Tennessee and neighboring states are presented that may provide new evidence of multiple trade/migration paths.

Bautista, Giovanni (National Museum of the Philippines) and Belinda Mollard

[254] *Cultural Resource Management in the Philippines: Current Practices, Trends and Challenges*

The protection, preservation and conservation of archaeological resources has been a challenge in the Philippines all throughout the years given that there are various threats that endanger their scientific, cultural, and educational value.

As there are programs and measures the Philippine government carry on including state-enacted cultural/archaeological laws all throughout the country in order to safeguard these valuable resources, it is still the great task and effort to make the general public appreciate and value archaeology—to further educate the public and instill among them the value of these archaeological resources.

This paper presents the current practices and trends on how Cultural Resource Management is being undertaken in the Philippines which have a meager number of practicing archaeologists, with the National Museum of the Philippines at the forefront and central authority on matters concerning archaeology. This paper also presents the realities, problems, and challenges that are encountered in dealing with these finite, nonrenewable and irreplaceable archaeological resources in our country.

Baxter, Jane (DePaul University)

[107] *The Freedom that Nighttime Brings: Privacy and Cultural Persistence among Enslaved Peoples at Bahamian Plantations*

When Bahamian scholar and educator Arlene Nash Ferguson wrote about the history of the famous Bahamian festival of Junkanoo, she began her story with enslaved people taking action under cover of darkness. Freed from labor for the two-day Christmas holiday, the enslaved went into “the bush” at night time, adorned their bodies with decorations found in the natural world, and reenacted, recreated, and created dances, songs, and traditions reflecting their African heritage. Nighttime afforded privacy, not just for activities that were forbidden by their owners, but also for activities that held a place of cultural significance that they did not want to share with people outside their community. This paper considers the landscapes of Bahamian plantations on the island of San Salvador, and the opportunities and affordances created when those landscapes were experienced and encountered after dark. By comparing diurnal and nocturnal landscapes of the plantation, it is possible to think about space and place making in ways that consider the role of privacy as an essential element in practices of resistance and in the perpetuation and generation of cultural knowledge.

[25] *Discussant*

Baxter, Erin (University of Colorado, Boulder)

[63] *Gone but Not Forgotten: Perishable Artifacts from Aztec Ruins (NM) Preserved in Photographs, 1916–1923*

When excavated 100 years ago, many of the perishable items found at Aztec Ruins did not long survive the process. Fortunately, chief archaeologist Earl Morris was an avid shutterbug and modern researchers are treated to dozens of curated photos of in situ perishable objects that include architectural features, basketry, fibers, etc. When (re-)placed into context with other archaeological data, these items are helping to tell new stories about Aztec Ruins.

[201] *Moderator*

Bazaliiskii, Vladimir [52] see Weber, Andrzej

Beach, Sheryl [26] see Beach, Timothy

Beach, Timothy (University of Texas at Austin), Sheryl Beach (University of Texas at Austin) and Nicholas Dunning (University of Cincinnati)

[26] *Equifinalities and the Limits of Soil, Ecology, and Climate Knowledge in Maya History*

We read history to understand the present and possible future worlds, but each situation that arises in time is unique. This paradox of history also fits natural science brought to bear on archaeology because often equifinality prevails, meaning there are several paths to the same ends we see in landscapes. These complicate our interpretations, both delightfully and disturbingly. Here, we address both the agronomic and climatic capriciousness of the variegated Maya puzzle. We consider terrace, wetland, and the other types of agriculture in diachronic and regional unevenness. We know most of these features from slow, exhaustive, small scale archaeology, but the patchy LIDAR we have suggests a much more complicated picture that imagery alone will not answer. We also address the limits of climate records both in terms of growing resolution on drought trends and its regional information. For example, scientists have used speleothem records both to show less and more tropical storms and high and low rainfall variability. In both climate and agronomy, we consider the overall limits and possibilities of their implications to the Maya archaeological record.

Bean, Daniel [113] see Davis, Loren

Beasley, Melanie (University of California, San Diego), Ian Orland (University of Wisconsin, Madison), John Valley (University of Wisconsin, Madison) and Margaret Schoeninger (University of California, San Diego)

[176] *SIMS Reveals Diagenesis and Seasonal Paleoprecipitation: A New Method for Reconstructing Past Environments*

One goal of zooarchaeological inquiry is to reconstruct past environments. This presentation will highlight a new method to identify paleoprecipitation records from the stable oxygen isotope values ($\delta^{18}\text{O}_{\text{en}}$) recorded in tooth enamel. Seasonal rainfall patterns are reconstructed using a secondary ion mass spectrometer (SIMS) to generate high-resolution serial spot analyses (13 μm spots) of $\delta^{18}\text{O}_{\text{en}}$. Additionally, this presentation will address the specific issue of identifying diagenesis (post-depositional alteration) in tooth enamel, a material that has long been assumed to be resistant to diagenesis. Previous research identified chemical changes the tooth enamel crystal structure using cathodoluminescence (CL). It is unclear whether changes identified by CL correspond to altered isotope ratios in the enamel. It was not until technological advancements with instrumentation, such as the SIMS, that the question of diagenesis in enamel could be addressed directly because oxygen isotope values could not be measured at a high enough resolution to test this question. The aim of this research project is to identify areas of enamel diagenesis, clarify previous notions about enamel preservation in the fields of

paleoanthropology and archaeology, and use the data from unaltered enamel regions to reconstruct the seasonal patterns of rainfall at an early hominin site.

Beat, Alicia [165] see Walker, Jeff

Beaubien, Harriet 'Rae' (Smithsonian/Museum Conservation Institute)

[32] *In the Beginning was the Codex*

During excavations at Cerén in the summer of 1989, a flattened expanse of paint—roughly the size of a book, with several colors visible and possibly multiple layers—was found on the floor of a niche located at the base of a bench within one of the domestic buildings (Structure 2). The archaeologists' response was both elation at the prospect that these constituted the remains of a codex (painted bark paper or animal skin "book," depicted on elite Maya ceramics, with only a very few examples surviving from the time of Contact), and deep concern, given their very deteriorated and vulnerable state thanks to long-term archaeological burial in subtropical conditions. The serendipitous events that led me in my first foray south of the U.S. border to this artifact and its remarkable context have resulted in career-long involvement with archaeological conservation in Central America. The development of field recovery techniques for, and the technical elucidation and preservation of artifacts made from illusive craft technologies remain a special focus, including hoped-for painted codices—first at Cerén, subsequently at Copán (Honduras), Baking Pot (Belize), and Waka'-El Perú (Guatemala)—the outcomes of which will be presented in this paper.

Beaudoin, Ella (American University), Russell Cutts (University of Georgia), David Braun (George Washington University) and J.W.K. Harris (Rutgers University)

[181] *Evidence of Early Fire? Spatial Patterning and Stratigraphic Anomalies at FxJj20 Main-Extension-0*

Recent reviews have identified the control of fire as an important innovation in the history of human adaptation. The FxJj20 Main-Extension-0 locality, an oxidized sediment feature, may be associated with hominin-controlled fire. This locality was recovered from sediments in the Okote Member, of the Koobi Fora Formation, Kenya. Radiometric age estimates on associated tephra indicate that the locality is likely 1.5-1.64 Ma. This locality is associated with multiple sedimentary anomalies that were excavated in the 1970s (at the nearby FxJj20Main/East localities). These features have previously been described as indicative of combustion. Most recently, excavations recovered a similar feature at FxJj 20 Main-Extension-0 using innovative methods. Three-dimensional reconstructions of the excavation were developed in combination with micro-morphological analysis, thermoluminescence analysis, and the identification of "thermal curved-fractures" that indicate the exposure of artifacts to high temperatures. Initial analyses of spatial associations suggest hominins may have had an influence on these combustion features. Particularly, we investigate the spatial relationship of potentially fired sediment and other indications of combustion. Further analysis of thermoluminescence, micromorphology, and petrographic analysis of sediments and potentially heat fractured stone may clarify the role of hominins in the control of fire in the Koobi Fora Fm. over 1.5 mya.

Becerra, Gibrán

[264] *Poder, autoridad y paisaje político en la zona costera de la sierra de Santa Marta, Los Tuxtlas, Ver.*

En este trabajo se intenta reconocer los fundamentos, las condiciones y los posibles componentes del poder político vigentes en el último periodo de ocupación prehispánica (Clásico Tardío, 600–1000 D.C.) de la zona costera de la sierra de Santa Marta, Los Tuxtlas, Veracruz. Con base en el análisis del espacio, la arquitectura y la variabilidad de los restos materiales de las actividades humanas se evalúan dos asentamientos prehispánicos: Piedra Labrada y La Perla del Golfo, con el objetivo de dar un acercamiento a los procesos de control, uso y despliegue del trabajo en los programas arquitectónicos, los posibles conflictos y los mecanismos de dominación existentes entre estos asentamientos.

Becerra Alvarez, Marimar (Universidad Veracruzana)

[216] *360 grados. Uso y función de las estructuras circulares de la zona costera de la sierra de Santa Marta, Los Tuxtlas, Ver.*

La arquitectura es una forma de expresión cultural producto de la abstracción humana, a través de ella el hombre materializa ciertas ideas y va modificando su entorno para construir paisajes que son determinados por los procesos históricos y que responden a sus necesidades funcionales, prácticas y estéticas. En la zona costera de la Sierra de Santa Marta se tiene el registro de pequeñas estructuras arquitectónicas superficiales de forma circular asociadas a los sitios portuarios de la costa. En esta ponencia se pretende explicar a través del análisis de las evidencias arqueológicas de uno de estos elementos, la secuencia constructiva y deposicional que presentan, para determinar su función, así como los procesos y necesidades sociales a los que se circunscriben.

Bechis, Florencia [272] see Lanata, Jose

Beck, Jess (University of Michigan - Museum of Anthropology)

[116] *Mortuary Multiplicity: Variability in Mortuary Treatment at a Late Prehistoric Matrix Village from Spain*

At 113 ha, Marroquíes Bajos (Jaén, Spain) is one of the largest villages known for the Iberian Copper Age. Attention was first focused on the site in the 1960s after construction work underneath the modern city of Jaén unearthed a series of elaborate artificial burial caves. However, over the past several decades salvage excavations revealed even more mortuary areas at the site, including commingled depositions in enclosure ditches, primary and secondary inhumations in discrete subterranean mortuary areas, and clusters of poorly defined, fragmentary, and commingled deposits. Bioarchaeological analysis of this variability in mortuary treatment is key to reconstructing the social organization and historical trajectory of this early matrix village, and is particularly important for understanding the development of social inequalities that may have contributed to the settlement's eventual decline. Here, I discuss the multiple lines of evidence that can be used to unpack the variability in mortuary behavior at this Late Prehistoric village, ranging from quantitative dental and skeletal approaches, assessments of age and MNI, consideration of contextual evidence from the Spanish gray literature, biochemical approaches to diet and mobility, and radiocarbon dating of remains.

Beck, Margaret [123] see Trabert, Sarah

Becker, Sara [25] see Blom, Deborah

Becker, Sara (University of California, Riverside)

[204] *Did Potters Urn? Potential Skeletal Evidence of Ceramic Production from the Ch'iji Jawira Site in Tiwanaku, Bolivia*

The city of Tiwanaku (A.D. 500–1100) in the Bolivian altiplano was comprised of multiethnic neighborhoods, with some of these barrios being home to “guild-like” specialists laboring at differing jobs. Ch'iji Jawira, one site within this community, is often described in the archaeological record as containing both a manufacturing center for pottery and a residential area home to these ceramic manufacturers. Prior bioarchaeological research has also shown that the people who were buried at the Ch'iji Jawira site show statistically significant differences in labor and activity from others who lived in the Tiwanaku capital. This study further explores the idea that Ch'iji Jawira was home to ceramic specialists using a life-history approach and describing one individual from this community, a 30-39 year old female. This person has evidence of osteoarthritis in her arms, wrists, hands, fingers, and lumbar spine. Furthermore, the bones of her wrists, hands, and fingers show extensive skeletal changes at tendon and muscle attachment areas. While it cannot be definitely determined that she was a potter, her bones do suggest she worked at tasks different from other Tiwanaku citizens involving repetitive joint movement as well as heavy arm and hand musculature.

Becker, Hilary (University of Mississippi)

[271] *Roman Pigments and The Trade in Naturally Sourced Products*

Pigments were used to decorate both wealthy and common houses in ancient Rome but the mechanisms by which raw pigments were collected, traded, and sold have never been studied. A network developed to facilitate the importation of pigments from across a wide expanse of the Roman empire. While the ochres present in a shop in Rome might be locally and regionally sourced, the presence of pigments like madder lake or cinnabar are the result of long chains of commercial transactions, which served to transport these materials to central Italy from across the empire. This extensive network provided consumers of pigments with the choice of a range of colors. Artists in Roman Egypt used Spanish red lead on certain “red shroud mummies” rather than local red pigments. Various white pigments were imported and used, and while the differences between each were not necessarily detectable with the naked eye, tradesmen kept careful track of them since their qualitative differences (e.g., luminosity) translated to differences in price. An exploration of the pigment trade establishes a cross-section of the larger Roman economy at work. Ultimately the colors chosen for a Roman fresco reflect the vital trade of the larger Roman empire on one's walls.

Beekman, Christopher (University of Colorado Denver)

[101] *The Early Chronological Sequence at Los Guachimontones-Loma Alta, Jalisco*

The site of Los Guachimontones-Loma Alta is the largest political center of the Late Formative/Early Classic periods in central Jalisco, with an occupation extending from the late Middle Formative through to the end of the Postclassic period. This spans more than 1,500 years and includes three major material culture complexes already defined in other locations—Tequila II, III, and IV, El Grillo, and Atemajac I and II. The primary ceremonial architecture of the site pertains to the Tequila complex. Radiocarbon dates define the Tequila occupation at the site, but a finer grained chronology is necessary for research into social questions. Recent analysis of the ceramics and hollow figures from the different architectural groups allows the recognition of markers from three phases of the Tequila occupation. This part of the sequence is based in radiocarbon dates, architectural stratigraphy, wares, types, and modes of the ceramic vessels and hollow figures, offerings, and burials, and short stratigraphic snippets in different areas of the site. I describe the sequence, and the complex pattern of site growth over a period of 700/800 years.

Beier, Zachary (The University of the West Indies Mona)

[126] *Dwelling Practices at the Cabrits Garrison Laborer Village*

Colonial military sites in the Caribbean have traditionally been considered as dominant monuments of European expansion, technology, control, and competition. Missing from these narratives are the diverse communities that came together within the walls of fortifications. At the Cabrits Garrison, Dominica, occupied by the British military between 1763 and 1854, the policy of incorporating enslaved laborers into auxiliary roles and later into soldiers serving in the West India Regiments is a part of the extensive archival record of the site. The dynamics of this changing military labor regime are also evident in spatial and material practices at the household level. This paper compares how administrators in the British Army conceived of domestic areas at the Cabrits Garrison with how they were actually lived in by enslaved and other lower status inhabitants. It relies on archival and archaeological evidence regarding residential quarters occupied by military laborers to document the architectural character of these dwellings as well as their social and cultural content. This household-level analysis provides a vantage point linking Caribbean fortifications to wider trends in the study of enslaved environments throughout the region.

[126] *Chair*

Beimat, Maryse [181] see Himes, Sarah

Beisaw, April (Vassar College)

[128] *Taking Their Water for Our City: Archaeology and Water Rights in New York and Beyond*

Water rights is a social issue of growing importance. Recently, the United Nations declared access to clean drinking water to be a basic human right. Yet financial groups are predicting that water is the next major commodity, to be bought and sold like oil. What few are talking about is the long history of water flowing towards political and social centers, and away from rural populations. As Leith Mullings stated in her presidential address, anthropology pays attention to not only that which is manifest, but also to that which is concealed. A social archaeology of New York City's water system reminds us all of the long-standing nature of urban water crises and provides a way of critiquing past decisions to inform future ones. For approximately 200 years, the city's growth necessitated the acquisition of water from more and more distant sources. But places rich in water are inhabited places. Taking water from rural communities reshaped them and continues to restrict their development. Documenting the materiality of water struggles over time and space provides opportunities to ask what (and who) we are willing to sacrifice to ensure the future of our cities.

Beiter, Gary and Monica Oyola-Coeur

[253] *Perry Pines Sites: A Cultural Resources Phase I Survey Report*

A Phase I survey was conducted in Perry Pines, Taylor County, Florida for an expansion of limestone mining of the area. The research aimed at locating and assessing potential archaeological and historical resources within the project area. Six archaeological resources were identified: a habitational site, a camp site, a bridge site and three quarry sites for stone tool making. Located in the North Peninsula Gulf Coast archaeological region, the Perry Pines sites appear to have been intermittently used and their resources extracted for over 2,000 years, spanning from the Archaic to the present. Cultural artifacts and features ranging from ancient lithic tools, to early twentieth century timber operations, provided insight on past human activity, site function, and use of the project area's natural resources over time.

Belardi, Juan Bautista [205] see Nuevo Delaunay, Amalia

Belardi, Juan (Univ Nac de la Patagonia Austral), Flavia Carballo Marina (Universidad Nacional de la Patagonia Austral), Gustavo Barrientos (Universidad Nacional de La Plata / CONICET) and Patricia Campan (Universidad Nacional de la Patagonia Austral)

[207] *Hunters in the Viedma Lake Basin (Southern Patagonia, Argentina): Differences and Continuities in Landscape use during the Late Holocene*

The Viedma lake basin—connected to the Patagonian Southern Ice Field—has been recently incorporated to the discussion about the human occupation of southern Patagonia. The distribution of artifacts in different sectors of steppe: 1) plateaus (950–1000 masl), 2) plateaus basis (750 masl), 3) intermediate pampas (300–700 masl), large open spaces formed by glacial deposits, and 4) the north coast of the lake (255–300 masl) has been surveyed. The study was complemented with technological artifact analysis, surveys of rock art sites, hunting blinds, and excavations. Chronologies (mainly in relation to the last 3,500 years B.P.) and archaeofaunal samples of guanaco (*Lama guanicoe*) were obtained. The archaeological landscape shows variability in logistic and residential components related to the different landscape sectors. A remarkable reduction of the residential mobility is registered in the archaeological record of the Cerro Índice Tehuelche-Aonikenk reserve (structures and rubbish areas with high frequency of glass scrapers) during historical times.

Belcher, William (Division of Social Sciences (Anthropology))

[143] *Fish Remains in an Early Village Context: Provisioning during the Ravi Phase of the Indus Valley Tradition (Pakistan)*

Fish remains from the earliest deposits at the Indus Valley site of Harappa (Punjab Province, Pakistan) appear to have skeletal element distribution and cut mark patterns that are different from later deposits associated with a more complex social organization related to an urban setting. The earliest village-level fish assemblages (Ravi Phase) appear to be representative of the types of provisioning associated with direct access to either the fish resources or the fish mongers; later assemblages (Kot Diji through Harappan Phases) appear to be representative of a combined direct and indirect access to fish resources. This change is thought to be representative of political changes as villages became larger urban entities and/or were tied into changing economic associations, moving from more local to a more regional focus in trade and food resources.

Belfer-Cohen, Anna [52] see Goring-Morris, Nigel

Bélisle, Véronique (Millsaps College)

[198] *The Development of Inequality in Middle Horizon Cusco: Entheogens and Ritual Ceremonies to the Rescue*

The Andean and Amazonian regions are home to numerous plants that can be prepared to induce altered states of consciousness. During the pre-Inka period in the Cusco area, evidence from the village of Ak'awillay indicates the consumption of alcohol, coca, and hallucinogens in public ceremonies. Some of the rituals involving entheogens could have corresponded to healing sessions, but the paraphernalia uncovered at the site suggests that most hallucinogens were consumed to communicate with the supernatural. These activities provided key individuals with a privileged access to followers, spirits, and deities that could have set them apart from the rest of the population, contributing to increasing inequality in the region during the Middle Horizon (A.D. 600–1000). The procurement of psychoactive substances and other ritual items from the jungle and elsewhere further indicates access to long-distance trade networks that could have been used to support, display, and justify status at Ak'awillay. Despite the presence of Wari colonists in the region, select individuals living at Ak'awillay were able to connect to a larger network that not only exchanged goods but also shared beliefs and ritual practices during the Middle Horizon.

Belknap, Daniel [118] see Kelley, Alice

Bellia, Angela (New York University - University of Bologna)

[271] *Musics, Cults and Rites of a Greek City in the West: The Case of Selinus*

Studies on Ancient Greek music often concentrate on evidence from Athens or Sparta. However, Athenian or Spartan musical activity may not be typical of other areas of the Greek world, particularly the western Greeks, as indeed is evident from other areas of social, artistic, and political activity. This paper will combine the methods of musicology and archaeology towards the study of the archaeological remains of musical interest, considering their findspot and context of use, in order to place musical activities in a well-defined space and occasion and to interpret the cultural, religious, and social meaning of musical performances. The research will bring out a particular musical tradition of the western Greeks and will reconstruct the role of music in the specific context of Selinus, was one of the most important western Greek settlements during the Archaic and Classical periods, as regards both private and public, especially religious, life. The survey aims to analyze the musical activities in sacred places, where male and female oriented rituals were performed. Based on our approach, this paper will provide the opportunity for a reflection on the way in which the western Greeks reworked the musical heritage of the motherland, and reinforced their cultural identity.

Bello, Charles [159] see Dillian, Carolyn

Bellomia, Valeria (Sapienza, Università di Roma), Ricardo Higelin Ponce de León (Indiana University Bloomington) and Alex Elvis Badillo (Indiana University Bloomington)

[236] *Omichicahuaztli: Production, Use, and Transformation Over Space and Time in Mesoamerica*

How can changes in production and use of a single class of ancient artifact allow us to understand changes in their meaning through time and space? We address the reasons behind the cultural practice of making the Omichicahuaztli, or notched human bones, in Mesoamerica, studying the unique histories of

each object in correlation with the geographic area in which they were found and the social group that produced them. We studied over 100 Omichicahuaztlis from central, southern, and western Mexico across the Classic (200–900 A.D.) and Postclassic (900–1521 A.D.) periods. We analyzed 1) which anatomical human bone was chosen as raw material, 2) the preparation process, 3) the number of notches and 4) the way it was used in its social context. Using GIS we mapped the location and examined the spatial distribution of the Omichicahuaztli in Mesoamerica by time period and manufacture technique. Our results will explore transformations of the meaning of notched human bones in Mesoamerica, within the frame of the indigenous perception of body and bones. This study will allow us to identify any similarities and differences in the use of Omichicahuaztlis through both diachronic and synchronic views.

Bellorado, Benjamin [17] see Peeples, Matt

Bellorado, Benjamin (University of Arizona)

[209] *Clothing the World in a Social Skin: Recognizing the Role of Materialities of Dressing and Metaphor in the Ancient North American Southwest*

Scholars have suggested that the process of dressing both animates and ascribes identities to inanimate things. During the thirteenth century, people in the Mesa Verde region of the North American Southwest conceptually dressed special structures, pottery, baskets, and even cotton garments in similar ways. These diverse media were often adorned with clothing depictions and woven textile designs, painted on a white clay-coated background. Grounded both physically and conceptually in bodily experiences, these dressings covered the raw forms of containers with substances of transformation and concealment, and painted with similar stylistic decorations as found in each of the other media, all of which were ultimately grounded metaphorically in cotton textile and basketry decorative canons. Through conceptual metaphor, ideas about human bodies and appropriate ways to clothe them were transferred onto, and blended with, other material domains. These materials were connected by action of practice—the act of being dressed, and connected in materialities of metaphor and clothing. As clothing did for people, dressing buildings and other containers allowed them to become socially embodied persons, and to be linked conceptually to containers in other media. This presentation discusses recent research mapping networks of materialities of clothing and ritual practice across time and space.

Belmaker, Miriam (The University of Tulsa)

[214] *Dental Microwear Texture Analysis (DMTA): Paleodietary and Paleoecological Aspects*

Microwear is based on the correlation between function, form, and behavior. 3D Dental Microwear Texture Analysis (3D-DMTA) combines the use of high-resolution white light scanning confocal microscope (Sensofar) with the analysis of the data using scale-sensitive fractal analysis (Sfrax, Surfract, www.surfract.com) for a new analytical tool to study dental microwear texture patterns. This method allows for statistical characterization of dental microwear features and resulted in the reduction of inter and intra observer variability, increased accuracy, and repeatability of the results. It has been demonstrated that 3D-DMTA has the potential to distinguish among diets of species that inhabit different habitats such as primates, bovids, and carnivores and it allows for a more refined distinction of diet that the distributions of pits and scratches size, commonly used in two-dimensional studies. Recently, novel research has focused on applying 3D-DMTA on micromammal (mammals smaller than 3 kg live weight). Despite the ubiquity and high quantities in archaeological sites, micromammals were not readily studied using 3D-DMTA. Here we present a review of the use of 3D-DMTA in paleodietary and paleoecological studies in large mammals and the novel use of 3D-DMTA in micromammals as paleoecological indicators and suggest new directions for future studies.

Belmar, Carolina [139] see Méndez, César

Belmar, Carolina (Depto. Antropología, Universidad de Chile), Silvia Alfaro (Independent Researcher) and Luciana Quiroz (Independent Researcher)

[207] *Tranquilla Site (PTF MLP 13): A Critical Evaluation of the Early Ceramic Tradition Life Style in the Choapa Valley (IVth Region, Chile)*

It has been stated the groups ascribed to the Early Ceramic Traditions of the Choapa Valley had a mobile hunter-gatherer life style, representative of the archaic period. This is reinforced by the absence of permanent and long term occupations in the valley. This scenario suffered an interesting shift with the discovery PTF MLP 13, a domestic site associated to a cemetery that counts with an important stratigraphic deposit, great amount of ceramic sherds, and milling stones. These findings question the manner these early ceramists were conceived, and have opened the discussion regarding the processes these groups experimented related to progressive social complexity and lead to a sedentary life. The characterization of the diversity and potentiality of the archaeological record of PTF MLP 13 offers the possibility to reconsider the actual concept the life style carried out by the inhabitants of the Choapa Valley through the determination and conditions of the use of the plant resources and its production. We will specifically study the carpological and plant microfossil evidence of the domestic and/or funerary use contexts, focusing on the artefact associated to the domestic-productive areas of cultivated plants.

Belt, Tom [131] see Carroll, Beau

Beltrán Malagón, María Bertilla (UNAM)

[136] *Evidencias prehispánicas y dinamismo cultural en el Centro de Veracruz: el caso de la región de Córdoba*

El Centro de Veracruz, localizado dentro del territorio que comprende el área geográfico-cultural de la Costa del Golfo, es una zona que presentó un marcado dinamismo dentro del desarrollo prehispánico mesoamericano. En este espacio se localiza la región de Córdoba, la cual posee una extensión de aproximadamente 935.51 km² y cuyo estudio es analizado a través de la lógica del asentamiento a lo largo de un valle por donde transitan los ríos Blanco y Seco-Atoyac. Hasta el momento se tienen identificados noventa y dos asentamientos prehispánicos, de diferentes temporalidades que incluyen desde el Preclásico hasta el Posclásico, siendo el Clásico el periodo de mayor ocupación. Las evidencias que se han localizado comprenden rasgos compartidos por zonas vecinas a la de Córdoba, tal es el caso de Maltrata, la cuenca baja del río Cotaxtla, La Mixtequilla y algunas más distantes, lo que conlleva a resaltar su importancia como una lugar de paso entre el Altiplano Central y la Costa del Golfo, y su papel dinámico dentro de diferentes tradiciones culturales del Centro de Veracruz.

Belz, Anthony (Haffenreffer Museum of Anthropology)

[217] *The J. Louis Giddings Archive at the Haffenreffer Museum of Anthropology*

As the Haffenreffer Museum approaches the 60th anniversary of J. Louis Giddings' arrival as its first director, a concerted effort has been undertaken—over the past two years—to rehouse, organize, and describe the vast and rich archive that Giddings created during his long career. Giddings was a dedicated and organized record keeper, who left a great amount and variety of material at the Haffenreffer Museum upon his untimely death in late 1964. This collection in its entirety is related to Giddings' professional career and is extensive in its scope—covering the years 1937–1967, it includes, but is not limited to: dendrochronological data; hundreds of photographic prints from publications, artifacts, sites, and ethnographic fieldwork; correspondence; expense reports; research notes; draft manuscripts; off-prints; and films, all of which are related to his work in the north. This presentation will discuss the scope of the collection, highlighting some of the most interesting and useful materials available for further research. The contents of the collection can be accessed online via the Rhode Island Collections and Manuscripts Online (RIAMCO).

Bement, Leland (Oklahoma Archeological Survey, OU) and Kirsten Carlson (Augustana College)**[16]** *Characterizing Cut Marks: A Comparison of Cooper and Badger Hole Butchery Patterns*

By describing tool cut marks on bones, Eileen Johnson elevated such incisions to the status of artifact. The size, shape, and morphology provided more than just details of cutting but also came with controversy as to whether these marks alone indicated a human presence. Building on the procedures employed by Johnson on the Southern Plains Cooper site bison bones, the Badger Hole kill assemblage is analyzed to provide a comparison of Folsom bison butchery at sites separated by only 0.7 km spatially and less than 250 years temporally.

Bement, Leland [123] see Marcum-Heiman, Alesha

Benchley, Elizabeth (University of West Florida) and Norine Carroll (University of West Florida)**[265]** *Archaeological Collections at the University of West Florida*

The Archaeology Institute at the University of West Florida in Pensacola includes a regional archaeological museum and curation facility. Approximately 450 archaeological collections and associated project archives from terrestrial and underwater sites are available to researchers and students. Projects conducted by the Institute along the northern Gulf Coast since the 1980s, and more recently by the Department of Anthropology, include Prehistoric through Industrial era archaeological sites including settlements, mills, forts, cemeteries, and shipwrecks. Collections of note come from excavations at three First Spanish presidios (1698–1763), one Spanish mission (1750s), and a British (1763–1781) and Second Spanish town (1781–1821). Shipwrecks include several First Spanish examples (1559, 1705), and ships from the American era used in the fishing, lumbering, brick-making, and transportation industries. The Institute also curates collections from other parts of Florida and Alabama. Collections are regularly accessed by UWF and outside researchers and students for reanalysis and reinterpretation. Public access to collections is available through exhibits and hands-on volunteer opportunities in the laboratory.

Bennett, Gwen (McGill University, Depts. of Anthropology & EAS)**[106]** *The Archaeological Study of an Inner Asian Empire: Using New Perspectives and Methods to Study the Medieval Liao Polity*

Archaeological and historical data, combined with GIS analysis gives us new perspectives on eleventh c. medieval period envoy missions from the Song Dynasty (960–1279) to the Liao Empire (907–1125) Middle Capital in Chifeng Inner Mongolia, China. The envoys' routes can be recreated on maps, and optimal route and viewshed analyses give us insight into the Liao's concerns about these foreign missions crossing their territory and how they addressed them. Furthermore, population estimates can be made from envoy information that can be used to extrapolate population density estimates from archaeological data for other areas in Chifeng.

Bennett, Lianne [260] see Bennett, Sarah

Bennett, Sarah (Florida Public Archaeology Network), Sarah E. Miller (Florida Public Archaeology Network), Amber J. Grafft-Weiss (University of Florida), Lianne Bennett (Deland High School) and Emily Jane Murray (Florida Public Archaeology Network)**[260]** *My Best Day at FPAN was Teaching Teachers: Celebrating 10 Years of Project Archaeology in Florida*

The Florida Public Archaeology Network was established in 2005 and within a year hosted its first Project Archaeology: Intrigue of the Past workshop. As a proud sponsor of Project Archaeology in Florida, regional center staff partnered with the National Park Service and University of Florida to publish the first Investigating Shelter investigation in the southeast. It was also the first in the Investigating Shelter series to feature a National Park site. Investigating a Tabby Slave Cabin teacher guide and student handbook were produced through an internal NPS grant that combined the efforts of Teacher-Ranger-Teachers, Park Service interpreters, FPAN staff, and cooperating archaeologist Dr. James Davidson from University of Florida. By investigating a Kingsley tabby cabin through a series of lessons (geography, history, archaeology, preservation), we hope teachers and students will better understand slavery and the families who occupied the cabins. In June 2016, the new Lighthouse Shelter curriculum will launch at the St. Augustine Lighthouse and Museum. Experience gained from the drafting, piloting, and publishing of the program will be discussed. Finally, this paper will highlight past, present, and future partnerships with Florida teachers.

Benton, Susan (Southern Methodist University)**[30]** *Complex Journeys: The Repatriation Experience and Tribal-Museum Relations*

Tribes and museums have experienced a paradigm shift in their relationships during the twenty-five years of the NAGPRA era. The experiences of each group have been multi-faceted and complex, driven by new legal mandates and opportunities and shaped by differing viewpoints as to what must, should, and could emerge from the repatriation journey. This paper will explore some of the assumptions, experiences, and future expectations that NAGPRA has engendered in various tribal and museum representatives who have, by choice or obligation, participated in this journey.

Bergh, Sarah [28] see Hadden, Carla

Bergh, Susan (Cleveland Museum of Art)

[172] *Dress Codes: Color Patterning in Wari Tapestry-Woven Tunics*

Artistically elaborate tapestry-woven tunics were the raiment of rulers and other esteemed elites of the ancient Andean Wari civilization (A.D. 600–1000). The tunics' figurative iconography is well known: drawn from a limited repertoire that often relates to the Wari state's official religious cult, it almost always comprises a single type of motif that repeats many times in different orientations and color combinations (color blocks) across each tunic's gridded body. Less legible and recognized today are the tunics' complex color patterns, which may have formed one of the garments' most important subject matters, on a par with figurative imagery. These standardized geometric patterns, which fall into about six categories, are generated by the diagonal alignment of four conventionalized colors blocks that were used to weave the motifs. This paper will explore the canons of color and its organization in the tunics, including systems of color equivalence implied by regular color substitutions that seem to have served as enhancements related to value, wealth, and prestige.

Bergin, Sean (School of Human Evolution and Social Change, ASU)**[72]** *Neolithic Spread Models, Agricultural Islands and Pivotal Parameters: Impressions Gleaned from Simulating the Spread of Agriculture in the West Mediterranean*

The significance of the spread of agriculture cannot be overstated and for this reason strong disagreement continues to arise over the processes responsible for the shift from the Mesolithic to the Neolithic. Four influential models have been proposed for the spread of agriculture in the west Mediterranean and can be applied to the circumstances of the Impresso-Cardial spread: the Wave of Advance Model, the Capillary Model, the Maritime Pioneer Colonization Model, and the Dual Model. All four models have been tested against the available archaeological evidence, including the available radiocarbon chronology, site locations, and artifact styles. As is so often the case in archaeology, not enough evidence is truly available to conclusively prove or disprove any one model. It is in this context that computational modeling can be best applied—to make existing models explicit, to evaluate the models of Neolithic spread, and to approach the spread of agriculture from an exploratory perspective. This research examines four well known models for the spread of agriculture by comparing the chronology generated by an agent-based model of each spread type to the chronological record for the arrival of the Neolithic.

[72] *Chair***Bergmann, Christine (University of South Florida), Robert Tykot (University of South Florida) and Robert Bowers (University of South Florida)****[204]** *Elemental Analysis of Human Bone using a Non-Destructive Portable X-ray Fluorescence Spectrometer*

Peru is commonly known for having the largest empire in precolumbian America but relatively less is known about the subsistence and migratory patterns of the pre-Inca communities that existed from the Initial Period through the Early Intermediate Period. During the Initial Period, interaction and trade was prevalent among coastal, inland, and highland populations with trade interactions intensifying later in time with peoples from the highlands. Our research tests the hypothesis that increased reliance on exchange networks among highland, coastal, and valley communities resulted in increased migration of highland populations into the coastal valleys. In support of our hypothesis, a portable X-ray fluorescence spectrometer was used to measure strontium, barium, calcium, and other elements in human bone from three archaeological sites in Peru, from varying and overlapping time periods, to elucidate dietary practices. Although the use of a non-destructive pXRF has become a very beneficial tool for the analysis of archaeological materials, relatively little has been done on human bone, due to limitations of surface analysis and issues regarding contamination and degradation. In addition, newly created bone standards are used to calibrate and enhance the validity of our data, as we apply this technique to other skeletal collections in the future.

Bergstrom, Velicia**[165]** *Partnering Louisiana Style*

We are not unique in this agency called USDA Forest Service. Kisatchie National Forest's Heritage Program does not get handed tons of money to perform archaeological survey to insure that the NHPA is accorded due process before the vegetation is managed and wildlife ponds are built. And sure, some of our colleagues still ask, why do we spend money on archaeology! As a manager, we look for least expensive, as archaeologists we look for great quality, and as tribal liaison we look to work with our tribes. One of the many assets that the Forest Service has is the Heritage Paraprofessional Qualification and Training manual. Initially designed to offer training for good folks that work in fire or timber on the forest to aid the lonely archaeologist has blossomed. Through various agreements that the Southern Region now has with our Federally Recognized Tribes, we have offered Heritage Paraprofessional Training to those who wish. And with this, heritage paraprofessional crews have formed. The Kisatchie National Forest has had the good fortune to work closely with several of these crews. This paper foci on cost effectiveness, the great quality of the work performed, and the satisfaction of working with our tribal partners.

Berman, Mary Jane (Center for American and World Cultures), Perry L. Gnivecki (Department of Anthropology, Miami University), Lisa Park Boush (Center for Integrative Geosciences, University of) and Erik Kjellmark (Department of Biology, Florida Southern College)**[222]** *Exploring Records of Prehistoric Anthropogenic and Climate Change in the Bahama Archipelago*

The peopling of the Bahama archipelago during the eighth through eleventh centuries A.D. occurred at a rapid pace. In this study, we examine several data sets to understand this fast-moving expansion. Sedimentological and geochemical data derived from cores from inland ponds and lakes from several islands in the Bahama archipelago indicate that migration took place during periods of hurricane hyperactivity, sea level changes, and hydrological variability. Settlement data and material culture indicate small-sized communities, short-term occupations, and high residential mobility. Archaeobotanical data are used to understand land-use practices and how the landscape was modified and managed. We explore the relationships among the archaeological, climate, and environmental records.

Berna, Francesco [177] see Hlubik, Sarah

Bernal, Marcela, Lucero Aristizábal (Universidad de los Andes), Carl Langebaek (Universidad de los Andes), Freddy Rodríguez (Universidad de los Andes) and Luz Pérez (Universidad de los Andes)**[122]** *Vivir y morir en tibanica, reflexiones sobre el poder y el espacio en una aldea muisca tardía de la sabana de bogotá*

This paper studies the relation between feasts and other issues that are traditionally related to the power of Muisca chiefs in their communities. The research question deals with the linkage between different dimensions of the social stratification in the Muisca site of Tibanica, including: feasting itself, health, kinship, and nutrition. It is argued that there is no lineal relation between such variables, and that Muisca social organization is best understood from a multidimensional and comparative analysis, recognizing the complexity of the issue at hand.

Bernal Rodriguez, Vanessa (Ecole du Louvre)**[102]** *Henry Reichlen: La trayectoria americanista a través de su colección y de sus archivos*

Pensar en la cultura Cajamarca nos lleva enseguida a pensar en Henry Reichlen. Indudablemente él fue el gran precursor y fundador de todo estudio científico sobre esta cultura. Su trabajo de campo en diferentes sitios de Cajamarca, sus diversos análisis de materiales arqueológicos y sobre todo la cronología que estableció continúan siendo grandes aportes para las investigaciones actuales. Sin embargo, ¿quién fue realmente Henry Reichlen? ¿A qué institución académica pertenecía y para quién trabajaba? ¿Cuáles eran sus objetivos? ¿Cuáles eran sus herramientas y prácticas de estudio? ¿Quiénes formaban parte de su entorno? ¿Quién o quiénes fueron sus mentores? ¿En qué contexto histórico realizó sus investigaciones arqueológicas y etnográficas? Muchas de estas interrogantes sobre su vida y obra han podido ser resueltas gracias al análisis del "Legado Reichlen", conservado actualmente en el Museo del Quai Branly. Estos archivos, documentos personales y la inmensa colección de objetos arqueológicos y etnográficos que Reichlen pudo reunir a lo largo de su vida nos han permitido revelar el importante trabajo de este investigador, arqueólogo y americanista que ha contribuido no sólo al conocimiento de la cultura Cajamarca en el Perú, sino también al descubrimiento de las culturas peruanas por el resto del mundo.

Bernard, Henri (Université Paris 1 Panthéon Sorbonne) and Emiliano Melgar (INAH Museo del Templo Mayor)**[44]** *Manufacturing Techniques of Olmec Art Sculptures from Arroyo Pesquero in the MAX (Museo de Antropología de Xalapa)*

Since its discovery in 1969, the site of Arroyo Pesquero, in southern Veracruz, has been an emblematic town with an Olmec offering that guards some similarities with the sites of Manatí and La Merced, related to the divinities of water and fertility. In the bed of the river were deposited masks, axes, and other objects in jade with an excellent manufacturing and beauty. The sculptures of this site with an archaeological context are now stored at the Museum of Anthropology in Xalapa. In this paper, we present the analysis of the technological manufacture of these objects, following the methodology used by the laboratory of experimental archaeology in lapidary objects at Templo Mayor, which has an extensive reference in experimental techniques of abrading, burnishing, polishing, and prehispanic incisions. The results allowed us to understand the craft of these materials in this important site from Southern Veracruz during the Formative period.

Bernstetter, Jessica (University of Missouri - Columbia), Michael Kolb (Metropolitan University of Denver) and William Balco, Jr. (University of North Georgia)**[81]** *Uncovering the Local Economy: A Ceramic Analysis of Exotic and Local Amphorae at Salemi, Sicily*

Sicily has long been a hotbed of archaeological activity. During the Late Iron Age, Greek, Roman, Punic, and indigenous Elymi groups were involved in a complex network of trade and exchange. At the site of Salemi in western Sicily, there is evidence of participation in a widespread Mediterranean sphere of exchange. For this research, sourcing studies were conducted on transport amphorae to measure the degree of foreign influence on the local economy of Salemi. Preliminary data collected in the summer of 2013 from multiple units suggested that the amphorae were produced locally. Initial pXRF analysis revealed that there was no statistically significant difference in the chemical composition across samples. These preliminary results will be used as a pilot study for dissertation research which will aim to identify the technology used to construct the amphorae in hopes of identifying the groups responsible for manufacturing the vessels. Identifying the technology and production groups is both valuable and necessary in determining whether or not the Elymi were playing an active role in the local economy or if the economy was being controlled by the much larger Greek, Roman, or Punic groups.

Bertolino, Silvana [91] see Giesso, Martin

Bethard, Jonathan (Boston University), Anna J. Osterholtz (University of Nevada Las Vegas), Zsolt Zyaradi (Haaz Reszo Museum) and Andre Gonciar (ArcheoTek Canada)**[24]** *Marginalized Motherhood: Infant Burial in 17th Century Transylvania*

During the last four decades bioarchaeologists have enriched what we know about the lives of past people; however, many questions remain unexplored and understudied. Among these, the lived experiences of expectant mothers and their newborn infants have not received much attention in the bioarchaeological literature. Moreover, few scholars have attempted to understand how women who experienced a failed pregnancy or loss of a newborn infant have dealt with this reality, particularly in terms of belief systems about salvation and the afterlife. In this paper, we utilize a seventeenth century bioarchaeological context from eastern Transylvania to explore these questions in further detail. In 2007, archaeologists performed a salvage excavation in the Reform Church in the village of Telekfalva, located in present-day Romania. They recovered remains of 70 individuals, the majority of which were perinatal infants. The skeletons presented marked signs of physiological stress and offer some insight into the health and stress loads of the women who carried them. In addition, the careful placement of these infants under the floor of the community's Reform Church offers powerful evidence about the importance of burial for even the youngest, and in some instances, never viable community members.

Bethke, Brandi (University of Arizona)**[82]** *Dog Days to Horse Days: Evaluating the Rise of Nomadic Pastoralism among the Blackfoot*

This paper will examine the extent to which the adoption of the horse created a transition in Blackfoot modes of production from hunting and gathering to incipient nomadic pastoralism by tracing the horse's effect on Blackfoot settlement patterns and landscape uses during the protohistoric and historic periods in the northwestern Plains. While the socio-economic consequences of the horse's introduction have been studied from a historical perspective, the archaeology of this transition remains ambiguous. This paper seeks to explore the dynamics of the Blackfoot equestrian transition by incorporating data from archaeological site records, archival collections, and contemporary ethnography into a broad, comparative Geographical Information Systems (GIS) analysis of the horse's influence on Blackfoot landscape utilization. Understanding where the Blackfoot were situated before and after acquiring the horse by tracing their archaeological footprints will add a material dimension to the story of the horse in the Plains and further test the claim that there was a transformation in settlement strategies by historic Blackfoot groups in response to the needs of their horses.

[82] *Chair***Betts, Matthew (Canadian Museum of Civilization), David Black (University of New Brunswick), Brian Robinson (University of Maine) and Arthur Spiess (Maine Historic Preservation Commission)****[157]** *Prehistoric Coastal Adaptations to the Northern Gulf of Maine and its Watershed*

The northern Gulf of Maine (GOM) and its watershed have attracted humans for the last 12,500 years (cal B.P.), and evidence of marine economies is well established in adjacent regions by ca. 8000 cal B.P. Sea level rise (SLR) has obscured our understanding of early coastal adaptations, though underwater research and some near-shore sites are providing important insights. The earliest evidence from shell middens dates to ca. 5000 cal B.P., and reveals that bivalve collecting and the seasonal exploitation of benthopelagic fish (such as cod) were important, though varied in intensity, throughout the Late Archaic

and Woodland periods. However, significant economic shifts have occurred. In particular, a Late Archaic focus on marine swordfish hunting was replaced by a dramatic increase in inshore seal hunting in the Woodland Period. After ca. 3100 cal B.P., inshore fishing for cod, flounder, sculpin, sturgeon, and other species intensified. During the Late Woodland Period, shellfish exploitation declined somewhat and the hunting of small seals, and in some areas, white-tailed deer, increased sharply. The extent and nature of coastal economies in the northern GOM was controlled, in part, by SLR, increasing tidal amplitude, and concomitant changes in surface-water temperatures, in tandem with broad regional cultural shifts.

Betzenhauser, Alleen (Illinois State Archaeological Survey)

[171] *Measures of Inequality in the Mississippian Heartland*

Cahokia, the earliest and largest Mississippian (A.D. 1050–1400) mound complex, is situated in the American Bottom of Illinois. It is widely considered to be the center of a regionally integrated polity complete with subsidiary centers, specialized settlements, and rural farmsteads. Investigations at Cahokia proper and in the surrounding countryside over the past 50 years have provided a wealth of data concerning settlement layout, structure size, and shape, and the differential distribution of material remains. In this paper, I calculate Gini indices for Cahokia and outlying settlements based on data reported in recent analyses of extensive excavations at Cahokia (e.g., Pauketat 1998, 2013) and the wide range of sites included in the FAI–270 project (see Porter and Bareis 1984). The indices are compared both within sites and between sites for the various Mississippian phases to investigate inequality as indicated by differences in structure size. I then situate these new measures of inequality within the body of data already available for the Mississippian period in the American Bottom in order to further assess the degree of centralization and inequality.

[137] *Chair*

Betzenhauser, Alleen [137] see Watts Malouchos, Elizabeth

Bevan, Andrew [173] see Li, Xiuzhen

Bey, George (Millsaps College)

[109] *Discussant*

Bey III, George [127] see Parker, Evan

Beyene, Yonas [22] see Sahle, Yonatan

Beyer, Morgan (University of Nebraska - Lincoln)

[115] *Differentiating History: Criteria to Distinguish Between Historic Euro and Native American Sites in Wind Cave National Park*

Wind Cave National Park, just north of Hot Springs, South Dakota, became a National Park in 1903. Because of its location in the heart of the Black Hills, the land now protected by the National Park System has been a hotbed of human activity for thousands of years and is the location of many archaeological sites, both prehistoric and historic. However, some of the most intriguing sites that can be found within the park's boundaries are those of indeterminate origin. Sites with both historic (ie., Metal) and prehistoric artifacts (ie., Lithics) raise many questions about exactly how archaeologists determine the difference not between historic and prehistoric sites, but between historic Native American and historic Euro American sites. Using both a known Euro American site and a known Native American camp as controls, criteria have been created that will allow testing not only of multiple other sites within Wind Cave, but across the American West. By conducting pedestrian survey and metal detecting at indeterminate sites in Wind Cave and comparing the assemblages found there, it has been possible to test the validity of the criteria in regards to the identification of historic sites as Euro or Native American in origin.

Beyin, Amanuel (University of Louisville)

[22] *The Relevance of the Abdur and Asfet Middle Stone Age Sites from the Red Sea Coast of Eritrea*

The Red Sea Basin is emerging as an important region for testing current hypotheses concerning early human dispersal routes out of Africa. However, the immediate peripheries of the basin, especially the African side had seen little prior Paleolithic research, hindering well informed assessment of the temporal and cultural contexts of hominin adaptation along the Red Sea. Owing to its strategic geographic position along the African side of the Red Sea, Eritrea (with ~1300 km of coastline) represents an ideal place to look for prehistoric sites associated with hominin dispersals out of Africa. Two separate field projects carried out between 1999 and 2005 along the Gulf of Zula region of Eritrea have documented evidence of Middle Stone Age occupations at two sites, namely Abdur and Asfet. The two sites are situated ~20 km apart, but lie broadly within the same landscape setting—coastal periphery of the Gulf of Zula. This paper will discuss the relevance of the Abdur and Asfet archaeological finds in assessing the potential role of the African side of the Red Sea Basin as a refugium and dispersal corridor for Late Pleistocene humans.

Bezerra, Marcia (PPGA/UFPA)

[167] *Living Things: Fishermen, Archaeologists and Fish-Traps in Amazon, Brazil.*

This presentation deals with the use of ancient fish-traps by fishermen of Vila de Joanes, Ilha do Marajó, Amazon, concerning the status of these sites as a living thing and their role in the constitution of memorial narratives about fishing. Based on research conducted with a group of fishermen I suggest that: a) the contemporary use of the fish-traps is not an act of destruction, but a memorial engagement with the past; b) the continuous process of decay and reconstruction of the fish-traps by fishermen are part of the social life of these structures; c) there is a gap between the official discourse of conservation and the sensible relationships of these communities with the things of the past. Aiming at these reflections, I consider the discussions proposed by Smith (2011) and Holtorf (2005), in particular, the ideas that "heritage does not exist" and that "preservation destroys the living memories," respectively.

Bicho, Nuno [49] see Umbelino, Cláudia

Bicho, Nuno (Universidade do Algarve), João Marreiros (Universidade do Algarve), João Cascalheira (Universidade do Algarve) and Mussa Raja (Universidade Eduardo Mondlane)**[170]** *An Early Gravettian Point Cache from Vale Boi: Implications for the Arrival of Anatomically Modern Humans to Southern Iberia*

During the 2014 and 2015 field season, we have excavated a new loci with an early Gravettian horizon in the Rock Shelter area of the site of Vale Boi, Southern Portugal. The loci is marked by a unique cache composed of close to 20 artifacts, most of which are pristine backed points in non-local chert. Due to typological characteristics, that includes points identical to those found in Pego do Diabo cave near Lisbon, and to those found in Vale Boi dated to 32.5 ka cal BP, as well as to the stratigraphical position and absolute depth of the finds, this cache is likely to be one of the earliest Gravettian occupations in southern Iberia. A series of AMS samples will be dated to confirm the estimated chronology of the cache.

In this paper, we will discuss the importance of such a find, including technology, typology, raw material, and use wear studies in addition to zooarchaeological and geoarchaeological analyses, for the arrival of first Anatomically Modern Humans to southern Iberia just prior to the H3 event.

[211] *Chair***Bickle, Penny (University of York) and Linda Fibiger (University of Edinburgh)****[25]** *Ageing, Childhood and Social Identity in the Early Neolithic of Central Europe*

Identity is an embodied experience and, as such, it has the capacity to change over a lifetime as the body grows, goes through puberty, suffers illness, and becomes inscribed with habitual movements from daily tasks. Understanding the process of maturation is therefore an important facet of investigating identity. In this paper, we focus on ageing and childhood in the early Neolithic of central Europe, the Linearbandkeramik (LBK) culture (5500–4900 cal B.C.), with particular reference to osteological data, isotopic analysis, and funerary practices. LBK identity is often characterised as static and fixed representations of sex or identities based on subsistence strategies pervade. Childhood figures less often in discussions about LBK identity and only then as a separate topic of study. This paper will address the experience of childhood, noting the evidence for illness and violence, the presence of any key life-stages and whether children were treated differently on death. We consider how embodied experiences differed between children and adults, and changed over the life-course. Finally, we ask to what extent bodily engagement in everyday tasks and activities, such as subsistence practices and mobility, led to the kinds of statements and rites which took place in the funerary context.

Biehl, Peter [95] see Willett, Patrick

Biehl, Peter (SUNY Buffalo)**[95]** *Chair***Biella, Jan****[267]** *Partnerships between the USFS and New Mexico SiteWatch*

In 2002, the New Mexico Historic Preservation Division (SHPO) established a statewide site stewardship program, New Mexico SiteWatch, that works with federal and state agencies to help preserve archaeological sites. The program is organized into local chapters and has integrated two established programs—one for the Santa Fe National Forest and the Bureau of Land Management in northwest New Mexico. The USFS has been a partner from the beginning. In addition to monitoring threatened sites, SiteWatch volunteers have provided additional support. The poster features one very successful partnership to remove extensive graffiti at Sandia Cave NHL, an important early Paleoindian site that remains important to nearby Pueblos.

Bies, Michael (OW Heritage Research L. C.)**[115]** *Wyoming Dinwoody Tradition Rock Art Superimpositions*

This poster presents superimposition sequences of Dinwoody Tradition Rock Art. The sites discussed are located in west central Wyoming. The superimpositions include those of styles within the Dinwoody Tradition and with styles that predate and postdate the Dinwoody Tradition. The poster also addresses difficulties associated with the evaluations of superimpositions within the Dinwoody Tradition. The sequences establish a relative chronology for the images.

Bigelow, Nancy [124] see Crawford, Laura

Bikoulis, Peter [205] see Gonzalez-Macqueen, Felipe

Billeck, William**[266]** *Repatriation to Lineal Descendants of Sitting Bull*

Despite numerous books and historical accounts of the 1890 death of Sitting Bull, only one obscure 1893 magazine article mentions that a U.S. Army surgeon cut off a lock of Sitting Bull's hair and took leggings from his body. These items were loaned to the Smithsonian's National Museum of Natural History back in 1896 and were recently evaluated for repatriation and were returned to Sitting Bull's family. This poster reviews the research that determined which descendants had the highest standing under the law, describes the return of these items to Sitting Bull's descendants, and discusses how the repatriation has affected the family.

Billman, Brian [122] see Bardolph, Dana

Binning, Jeanne (California Department of Transportation)**[232]** *Determination of the Size of a Percussion Biface from the Resulting Flakes*

The mechanics of successful biface reduction dictates the size and morphology of the generated flakes. Given these constraints, the ensuing flakes can be used to determine the size of the original biface. Using experimental data, an algorithm was developed that allows the estimation of biface size from reduction debitage.

Birakis, Tiffany [92] see Neville, Holly

Birch, Jennifer [137] see Brannan, Stefan

Birch, Jennifer (University of Georgia) and Sturt Manning (Cornell University)

[144] *Bayesian Modelling and Refinement of Iroquoian Regional Settlement Histories*

An oft-cited problem in Iroquoian archaeology is that radiocarbon dating offers weak support for chronological estimates. These concerns focus on short durations of site occupation and multiple intercepts in the radiocarbon calibration curve. This logic has led researchers to rely on relative dating methods such as ceramic seriation—overlooking the assumptions and unverified step-wise logic transfers involved in these methods. Refinement in laboratory procedures and the application of Bayesian chronological modeling methods to archaeologically sequenced datasets promises to resolve previous limitations for radiocarbon dating—and has transformed the archaeological record of other cases such as the Neolithic of southern Britain or the Bronze Age Aegean. Our research demonstrates that reservations about absolute dating in Iroquoian archaeology are no longer legitimate and contributes to a growing body of literature which explores how high-precision dating is essential for resolving theoretically-informed and problem-oriented questions about cultural change. To that end, we present a model using previously published and newly acquired dates to inform the historical development of Iroquoian societies in the late pre- and early-contact periods. In particular, our results bear new insights into patterns of coalescence, conflict, and confederacy formation in the fifteenth through seventeenth centuries A.D.

[144] *Chair*

Birchall, Joshua (Museu Paraense Emílio Goeldi)

[23] *Long-term Social Interaction is Reflected in Parallel Linguistic Structures among the Languages of the Lower Amazon*

A central concept in historical linguistics is that of the sprachbund, or linguistic area, where languages of different families show shared structural traits as a result of long-term social interaction rather than shared inheritance. Through language contact phenomena such as bilingualism, calquing, the formation of trade languages, etc., this process of linguistic diffusion and convergence sometimes flies under the scientific radar, especially in regions such as Amazonia where there tend to be cultural restrictions against widespread lexical borrowing. In this talk, I examine the validity of the lower Amazon as a sprachbund by comparing the structural patterns found in a sample of 20 languages from 8 different language families of the lower Amazon with those found in a continent-wide sample of over 90 languages from across more than 40 different language families (cf. www.sails.cld.org). Statistical testing of the geographic distribution of linguistic traits is used to delineate possible zones of sociolinguistic interaction, which can then be compared with other reflexes of regional integration from an ethnological and archaeological perspective.

Bird, Douglas [180] see Price, Michael

Birge, Adam (University of Texas at San Antonio)

[281] *The Creation of Colonial Sacred Space and Landscapes around Nevado Sajama, Bolivia*

Around the mountain of Sajama in western Bolivia exists a network of pre-Hispanic linear pathways that connect villages, chapels, churches, and hilltop altars. These pathways were primarily used in the Colonial era (1532–1825) but are still used by the local Aymara people for fiestas and rituals. The creation and transformation of this space demonstrates a changing ritual practice that occasionally reused pre-Hispanic places to combine Catholic and Andean sacred elements. Through this negotiation of practice, the local Aymara people were able to integrate Spanish colonial strategies into local understandings of the landscape, space, and ritual. In order to examine the nature of this transformation, I combine informal ethnographic data concerning the modern-day use of these pathways along with the material remains of rituals around nine pathways, five chapels, and 13 altars located primarily around the pueblo of Sajama.

Bishop, Katelyn [27] see Kovacevich, Brigitte

Bishop, Ronald (Smithsonian Institution)

[216] *Discussant*

Bissett, Thaddeus [49] see Carmody, Stephen

Bissett, Thaddeus (Cultural Resource Analysts, Inc.), David Anderson (University of Tennessee, Knoxville) and Martin Walker (University of Tennessee, Knoxville)

[218] *Creating a Discovery Model for Submerged Late Pleistocene and Early Holocene Sites on the Northern Gulf Coast*

Between 13,000 and 12,300 B.P., sea levels in the Gulf of Mexico increased rapidly. For the next 2,300 years, however, sea levels both rose and fell by centimeters per year, producing significant shoreline movement observable within a human lifetime. Because of continental shelf's topography, however, shorelines in different areas did not shift at the same rate. Areas with minimal movement would have seemed more stable and attractive for repeated occupations over generations. This paper models of shoreline movement on a decadal scale in the Gulf of Mexico to identify areas in which future submerged prehistoric archaeological surveys should focus.

Bissonnette, Ashley (Salve Regina & Mashantucket Pequot Museum and Research Center)

[61] *Pestilences of the Just War: An Epidemiologic Investigation of the Pequot War*

The Pequot War (1636–1637) destroyed infrastructure, resources and production, mobility, lines of communication, and social networks that comprised a complex preventative health system for both native and colonial peoples. The destruction and change in physical and social environments and the disproportionate burden of conflict, for the purposes of this paper, is defined as colonial trauma. Physical and social stressors exacerbated disease that changed the course of colonial battles and heightened the effect of conflict on military and civilian populations.

A process of historical epidemiology is applied to explain the toll of colonial trauma and its gateway effect on disease and people's preventative health strategies. Historical epidemiology facilitates an understanding into the social and natural history of disease and the pathways and patterns that are unique to war-torn communities. Due to the nature of fragmentary seventeenth century records, a variety of health approaches, and historical and archaeological evidences will be applied. Together, these will provide deeper insight into the Pequot War, and new ways of organizing and understanding the archaeological and historical records.

Bittencourt Fernandes, Glenda [23] see Pinto Lima, Helena

Blaauw, Maarten [95] see Armit, Ian

Blaber, Thomas**[286]** *Exploring Mica in Mortuary Contexts at Fallen Tree (9Li8) on St. Catherines Island, Georgia*

Recent excavations at the Fallen Tree Mortuary Complex (9Li8) on St. Catherines Island, GA, have recovered over 20 shaped mica artifacts and dozens of fragments associated within three Late Mississippian adult male burials. This non-local material was purposely shaped and interred with the individuals. In this paper, I present the results of recent analysis and explore mortuary mica use at this site. I examine the location and orientation of the mica discs to help determine spatial patterns and if these pieces were attached to the body at the time of interment. In addition, I examine several unfired clay artifacts that were associated with several mica pieces and may have been used as a method of adhering the mica to the body or a garment. More broadly, these data will help our understanding of Late Mississippian trade networks and mortuary mica use.

Black, Rachel**[6]** *The Bioarchaeology of None: Recovery and Analysis of an Historic Coffin from Fort McAllister State Park, Georgia*

In the spring of 2013, the office of the Georgia State Archaeologist was contacted by personnel from Fort McAllister State Park in Richmond Hill, GA, concerning what appeared to be an historic coffin eroding out of the marsh edge. Emergency salvage excavation was conducted to recover the remaining portions of the coffin. Initial field analysis indicated a sharp shouldered, hexagonal style coffin. Neither the lid nor any mortuary hardware was recovered. The coffin's location is within the McAllister Plantation site (9BN22), an antebellum rice and cotton plantation. However, archival research indicates post-Civil War occupations and that the area was used as an historic dump site. This location is consistent with other coastal Georgia cemeteries such as the Butler Island slave cemetery, the slave cemetery at Wormsloe Historic Site, and DuBignon cemetery on Jekyll Island, suggesting the marsh edge as a preferred location for intentional interment. Additional analysis further explored coffin construction to aid in determination of time period and archival research to determine whether this was a single burial, part of a larger cemetery, or an unused, discarded coffin.

Black, David [157] see Betts, Matthew

Blackman, Paul [267] see Smith, Lindsey

Blackmore, Chelsea (University of California, Santa Cruz)**[128]** *Queering the Narrative: Diverse Pasts and Political Futures*

This paper explores the impact of queer theory in destabilizing heteronormative and other fixed discourses in archaeological method, practice, and interpretation. By challenging the very idea of what constitutes "normal" in archaeology, queer theory provides new ways of thinking about and engaging with change, process, and difference. These discussions become important and necessary interventions in political debates around modern queer identities as well as social diversity at a much larger scale. Debates around sexuality, race, gender, and class remain at the forefront of political and social life in the United States. Yet the past, even the recent past, is rarely invoked in these conversations. By understanding the cultural and temporal situatedness of these categories, archaeology can and should contribute to these conversations. How can we incorporate queer theory into our classrooms in such a way that expands archaeological possibilities but also opens the discipline to a more diverse array of voices and identities? By deconstructing the very essence of "normal," whether we speak of the past or the present, we bridge these spaces and times in very real and substantive ways.

[5] *Discussant*

Blair, Susan [85] see Holyoke, Kenneth

Blair, Elliot (University of Alabama)**[213]** *Population Aggregation and Ceramic Communities of Practice at 17th Century Mission Santa Catalina*

Native made ceramics are, without question, the most abundant and intensively studied artifact type recovered at southeastern Spanish colonial mission sites. In the mission province of Guale, located on the northern Georgia coast, these ceramics consist of Irene and Altamaha series wares—primarily stamped and incised grit-tempered—related to the broader Lamar ceramics of the South Appalachian Mississippian region. Many studies have thoroughly established the broad contours and temporal patterns of these ceramics, examining stylistic changes over time and elucidating the colonial transformation from the Irene to the Altamaha ceramic series.

In this paper, rather than working from a framework in which I classify this pottery into either morphological or temporal types, I examine variation in individual ceramic attributes using a situated learning/communities of practice framework, exploring micro-scale patterns of social relationships within the Santa Catalina community. Working with a sample of ceramics recovered from five distinct neighborhoods within the Mission Santa Catalina pueblo, I identify distinct differences in the practices of ceramic production and consumption between these neighborhoods. I interpret these results in terms of the complicated patterns of population relocation and aggregation within the missions of La Florida.

Blake, Michael (University of British Columbia)

[178] *Eating and Drinking Maize: Diverging Roles for a Staple Crop in the Formative Americas*

Increasing reliance on staple crop agriculture has long been a cornerstone of most archaeological theorizing about emerging complex society—and especially early state formation. Comparisons of Formative Mesoamerica and Andean South America reveal the very different roles that the New World's most important grain crop—maize—played in Formative Period and subsequent economies. In Mesoamerica, where maize was first domesticated, it became an increasingly important, and symbolically laden, source of food after about 3,000 years ago. Beginning around the same time in the Andean region, long after maize had spread to South America, it became an ever more important source of carbohydrates for producing chicha—a sacred alcoholic beverage. Reviewing recent work on this topic, this paper explores the economic, political, symbolic, and nutritional implications of these two different histories of maize use in early complex societies—in particular during the Olmec and Chavín Horizons.

Blanton, Dennis (James Madison University)

[240] *Hummingbird Imagery and Smoking Pipes in the Mississippian World*

Smoking ritual was highly elaborated among late prehistoric Mississippian societies in the southeastern United States. Their smoking pipes were embellished with particular kinds of symbolism, not least among them avian themes. During one interval hummingbird imagery was prominent and this presentation will outline an explanation for it ultimately based on the symbiotic plant-pollinator relationship of tobacco and hummingbirds. The archaeological, ethnohistorical, and ecological bases for the interpretation will be described, and cross-cultural analogies will be explored.

Blanton, Richard E. [27] see Antorcha Pedemonte, Ricardo

Blasco, Ruth [278] see Rosell, Jordi

Blench, Roger [46] see Cheong, Kong

Blessing, Meggan [7] see Rock, Carolyn

Blessing, Meggan (University of Florida), Michelle LeFebvre (Faculty of Archaeology, Leiden University, The Net) and Neill Wallis (Florida Museum of Natural History)

[133] *Eat Local, Think Global? The Intersections of Knowledge, Culture, and Subsistence at Woodland Coastal Sites in the Southeastern USA*

Along the northern parts of the Gulf and Atlantic coasts of Florida and southern Georgia, coastal sites of the Deptford and Swift Creek archaeological cultures (circa A.D. 1 to 600) map onto the distinctive estuarine and salt marsh ecological zones of the region. Beyond their similar environments, inhabitants within this region seem to have been united by a cultural milieu characterized by commonalities in village life, material culture, ritual practices, and ostensibly, patterns of subsistence. This paper presents a comparative synthesis of zooarchaeological data from Middle and Late Woodland contexts on the Atlantic and Gulf coasts in order to investigate the interplay of animal use and consumption with traditional ecological knowledge, social interactions, and the localized ecologies of the region. With attention to the nuances of depositional context at each site in our study, we ask whether Woodland Period faunal assemblages along these coastlines only reflect the similarities and differences among local environments or whether they are also indicative of a more integrated pattern of traditional ecological knowledge and cultural preference that transcends the local.

Bletzer, Michael

[130] *To the Four Winds—Identities and Destinies on New Spain's Far Northern Frontier: The Piro and Tiwa Provinces of New Mexico, c. 1540–1740*

The roughly 200 years from the Coronado expedition to the reoccupation of the Tiwa pueblo of Sandia (Na-fiat, Tuf Shur Tia) in the 1740s brought unprecedented challenges on two of the largest Puebloan groups, the southern Tiwas and their neighbors, the Piros. Although impact from Spanish encounters and other stressors varied, Piro and Tiwa pueblos were dramatically reduced in number at the time of the Pueblo Revolt of 1680. Decades after the Revolt, the Tiwa pueblos of Isleta (Tue-I) and Sandia were resettled by people of Tiwa and other native ancestry. The Piro pueblos remained abandoned, however, despite several Spanish schemes to revive them.

Using a series of archival and archaeological data, I aim to track some of the processes that affected Piros and Tiwas before and after the Pueblo Revolt, when the continued occupation of both their homelands hung in the balance. The question is: how did the Tiwas manage to save at least two of their pueblos while the Piros were permanently scattered? The repercussions of these processes are still felt by the descendant communities today—especially Piro descendants whose organizational structure lacks official recognition and whose collective memory of their Ancestral pueblos is tenuous.

Bliege Bird, Rebecca [180] see Price, Michael

Bloch, Lindsay (UNC-Chapel Hill) and Erik Bolling (UNC-Chapel Hill)

[153] *Improving pXRF Estimates of Elemental Composition for Lead-Glazed Earthenware*

Lead glazing was a significant technological innovation to pottery production, increasing the strength and imperviousness of earthenwares. These ceramics are common components of archaeological assemblages in many parts of the world. They are known to have traveled long distances, thus determining their provenience has great interpretive potential. While studies analyzing archaeological ceramics with non-destructive X-ray fluorescence spectrometry

(XRF) have multiplied rapidly in recent years, lead-glazed ceramics have posed a particular challenge, as lead acts a shield for X-rays. This paper reports on the pXRF analysis of over 400 lead-glazed earthenware sherds recovered from historic earthenware production sites across the mid-Atlantic U.S. and in Great Britain. In particular, we investigated whether pXRF results could independently reproduce compositional groups determined using analytical methods less sensitive to lead concentration, such as laser ablation-inductively coupled plasma-mass spectrometry (LA-ICP-MS). XRF data were calibrated to produce quantitative results that made a variety of data analyses possible, and further facilitated the development of a correction function for lead. We demonstrate the potential of this method for compositional studies of lead-glazed wares, while offering best practices for sample selection and preparation to minimize lead contamination.

[153] Chair

Block, Dorothy (Palm Beach State / Broward College)

[246] *Prehistoric Ceramics From the Boyer Survey of Lake Okeechobee in the Northern Everglades*

In 2007, severe drought conditions at Lake Okeechobee, in the northern Everglades, revealed 6 prehistoric archaeological sites. These were the Caleb Boyer, Ritta Island, Kreamer Island, and three sites referred to as the Pelican Bay series. Since Phase 1 investigations failed to yield intact strata or datable carbon, it became necessary to assign each site's temporal position based on their artifact assemblages. This paper presents a detailed summary of the sites' ceramics and concludes that they range in date from 500 B.C. to approximately A.D. 1450 and thus can be assigned to the Glades I–Glades III periods.

Blom, Deborah (University of Vermont), Kelly Knudson (Arizona State University), John Janusek (Vanderbilt University), Sara Becker (University of California-Riverside) and Corey Bowen (Vanderbilt University)

[25] *Formation and Transformation of Identities in the Andes: The Constructions of Childhood among the Tiwanaku*

Despite their importance, little attention has been paid to childhood and the roles of children in the ancient Andes. Here, we focus our case study on the Tiwanaku polity of the South Central Andes, which expanded through migration and culture contact across parts of Bolivia, Peru, Chile, and Argentina between ca. 500–1100 A.D. The way the lives of children are structured and shaped are fundamental to understanding the formation and maintenance of states and their impact on the life experiences of children and adults. Using multiple lines of evidence, we focus particularly on the formation and transformation of social identities, the lived childhood experience, and constructions of childhood in the Tiwanaku state. Our data include ethnographic and ethnohistoric sources, bioarchaeological data on cranial modification, paleopathology, and funerary patterns, as well as biogeochemical indicators of paleodiet and paleomobility. This research on Tiwanaku shifts the debate from the traditional questions about the manifestations of state power in the public sphere to considerations of the state in the private sphere, through the perspective of childhood.

Blomster, Jeffrey (George Washington University)

[179] *Production, Consumption, and Multicrafting in the Formative Mixteca Alta, Mexico*

The importance of the household in domestic production and consumption has been demonstrated throughout Formative Mesoamerica. It is the success of the household's domestic economy that determines its survival. Focusing primarily on lithic artifacts, we explore locations in Formative Etlatongo, in the Mixteca Alta of Oaxaca, Mexico, that represent production and consumption of lithic tools and objects. Using ratios that compare lithic frequencies with ceramic frequencies from the same contexts, we examine several sites with especially high lithic frequencies, and consider the possibilities that these loci may represent specialized craft production in the sense that craft goods were produced for exchange and consumption outside of the producing household. Using a more fine-tuned analysis, we consider the kinds of raw materials and nature of lithic artifacts (type of debitage versus type of tool) to interpret possible production loci at Etlatongo, exploring diachronic change from the Early Formative (Cruz B phase) to the end of the Middle Formative (the Yucuita phase). To better understand the domestic economies of these dynamic social units, these loci are placed in larger crafting contexts, looking for evidence of other types of household production activities, reflective of multicrafting and larger subsistence activities and household interdependence.

[56] Discussant

Blong, John (Texas A&M University)

[62] *Late Glacial Hunter-Gatherers in the Central Alaska Range*

The earliest evidence for human occupation of eastern Beringia comes from the Tanana and Nenana river basin lowlands 14,000–13,000 calendar years ago, linked to the spread of shrub-tundra vegetation and associated resources as climate ameliorated during the Bølling-Allerød Interstadial. The earliest evidence for human activity in the adjacent uplands of the central Alaska Range is during the Younger Dryas interval, more than a thousand years after the initial colonization of the region. Following this, there is little evidence for sustained use of upland resources until the early-mid Holocene, when upland landscapes took on a central role in seasonal subsistence-settlement rounds. This paper reviews archaeological, geomorphic, and paleoecological data to present the timing, environmental context, and nature of initial human use of upland landscapes in the central Alaska Range, and evaluates the role of the uplands in land-use strategies during the initial peopling of eastern Beringia.

Blot, Jean-Yves [145] see Wagner, Ursel

Blouet, Helen (Utica College)

[287] *Think Inside the Box: Teaching Archaeological Methods and Interdisciplinary Problem Solving in the Classroom*

As a professor at Utica College in New York, I am faced with a challenge. I teach archaeological field methods, but I only have room to do so in the spring semester, a time dominated by cold and snowy weather. While a large-scale summer field school would be ideal, many UC students have summer work commitments or otherwise cannot afford to participate. So I have decided to bring the digging into the classroom. In this presentation, I will show how students learn and practice archaeological field methods in a classroom or lab setting through the use of an archaeology "sand box" or excavation simulation. Students engage in typical field work methods, excavation, lab analysis, report writing, and information dissemination. They also enhance critical analysis, teamwork, and leadership skills as they excavate, document, and synthesize observations, and present findings in a public setting. This spring, a new venture in this project will challenge students to combine the archaeology project with other academic and professional interests, such as business, marketing, education, and construction management, to create new information and perspectives. Not only will this create new knowledge, but the synergy developed across disciplines will provide innovations in problem solving.

Boaventura, Rui [103] see Grimes, Vaughan

Bobolinski, Kathryn (University of Montana), Anna Prentiss (University of Montana) and Matthew Walsh (University of Montana)

[244] *Cache and Trash: Variability in Storage Pits found at the Bridge River Site, Middle Fraser B.C.*

Prehistoric households living within Housepit 54 at the Bridge River winter village in south-central British Columbia participated in complex strategies of food acquisition, storage, and food waste disposal. The storage of wind-dried salmon, smoked- and dried- meat from terrestrial animals, as well as dried and preserved roots, berries, and other plant materials were all integral to over-wintering subsistence strategies. Pits dug into the interior floors and those located at the exterior of pithouses provided vital storage areas for preserved foodstuffs. James Teit, an ethnographer of the Upper Lillooet, suggested that food was stored "in two kinds of cellars"—one, presumably an interior, bark-lined cache and another, situated "near the house, and made with less care." To what degree do interior cache pits and exterior cache pits differ in size, shape, content, and perhaps inferably, function? At Housepit 54 interior pits are commonly found filled, not only with faunal remains, but with FCR, lithic debitage, and other detritus, including biological waste. This study examines what formation processes likely contributed to variability in cache pit materials at the household level and what difference (if any) was there between the use-life of interior vs. exterior caches?

Bocherens, Herve [139] see Rademaker, Kurt

Bocinsky, R. Kyle (Washington State University)

[261] *SKOPE: Bringing Continent-scale, Local Paleoenvironmental Data to Researchers and the Public*

Interest in the impacts of environmental change on human societies is increasing—and, given the latest IPCC projections, without a moment to spare. Archaeologists are engaging this interest by interpreting past human experiences with environmental change, often by reconstructing environments at local spatial and temporal resolutions most relevant to humans. Crucial tasks ahead include generalizing the plethora of reconstruction methods thus far created, comparing their skill and utility, and rendering them useful for researchers, policymakers, and the interested public. We discuss an ongoing initiative—SKOPE: Synthesized Knowledge of Past Environments—that seeks to (1) present state-of-the-art paleoenvironmental reconstructions in an intuitive, map-based web tool, and (2) generalize legacy paleoenvironmental reconstruction methods and extend them to novel landscapes. A prototype of the tool is now live at EnviRecon.org, and includes 2,000-year reconstructions of agriculturally-important climate variables across the entire U.S. southwest at roughly kilometer-scale resolution. Current efforts seek to scale the reconstructions to cover North America. Results from SKOPE research in the southwest are already demonstrating the promise of such large, high-resolution reconstructions for understanding past human behavior, and perhaps informing the future.

[5] *Moderator*

Bocinsky, R. Kyle [65] see Ellyson, Laura

Boczkiewicz, Roberta (University of Wisconsin - Milwaukee)

[244] *Rules for Fishy Trash?*

Analysis of intrasite spatial variation can improve our understanding of the dynamics of daily living of past populations. Fish remains are a special type of trash with distinctive aspects of capture, transport, preparation, and discard when compared to other fauna. This paper focuses on the analysis of fish remains from the Chimu site of Cerro La Virgen (A.D. 1000–1470) on the north coast of Peru. Cerro La Virgen is a rural town of mixed economy, including both fishing and agriculture, linked by road to the Chimu capitol at Chan Chan. The sample reported in this paper comes from recent salvage excavations by Brian Billman and Jesus Briceño at a residential compound and an associated secondary midden. I use the result of my analysis to evaluate the variation in fish taxa and body parts from these contexts.

Boero, Michael (San Jose State University)

[110] *Traditional Resource Management in the Sierra Nevada of California*

There is general agreement that past Native American populations significantly modified Sierra Nevada landscapes in California leading to a variety of beneficial resource outcomes. Further, many argue that through their lengthy history in the region, Native peoples initiated cascading regional effects on forest composition and structure in the Sierra Nevada. With this in mind, agencies and researchers are turning to the past to develop more effective resource management protocols. Concordantly, archaeologists are recognizing an opportunity to inform these protocols through multidisciplinary research projects that aim to more accurately represent the historical extent and impact of traditional resource management on Sierra Nevada forest structure. Collaborative programs involving Native groups and government agencies are occurring throughout the state, ostensibly providing diverse perspectives, labor, and restoration goals towards more effective resource management. Here, I present my ongoing research in the southern Sierra Nevada that explores if, how, and in what capacity traditional ecological knowledge is being utilized in public land management, with special regards to fire management and water resources. In addition to archaeological implications, critical attention is paid to the political and ecological interplay between federal agencies and local communities.

Bogaard, Amy (School of Archaeology, University of Oxford), Valasia Isaakidou (School of Archaeology, University of Oxford), Erika Nitsch (School of Archaeology, University of Oxford) and Amy Styring (School of Archaeology, University of Oxford)

[171] *The Agroecology of Inequality: Novel Bioarchaeological Approaches to Early Urbanization in Western Asia and Europe*

In this talk we use case studies to compare the agroecology of relatively egalitarian Neolithic communities (low ginis) with that of early urban societies featuring high levels of inequality (high ginis). We use a combination of novel archaeobotanical and zoological approaches to investigate arable land management. Neolithic sequences in western Asia, the Aegean and central Europe present contrasting settings in which early farmers developed labour-intensive cropping strategies that buffered households from risk but also fostered potential inequalities. Alongside 'high-input' crops demanding supplementary watering and/or manuring, it is increasingly clear that such regimes also included relatively stress-tolerant crops. The latter were crucial for the staggered emergence of stratified urban societies dependent on extensive, land-limited systems. We present new archaeobotanical evidence to show that an expanding scale of production ('extensification')—not intensification per se—can be discerned in disparate regions and may be a widespread feature of pronounced, long-term social inequality in grain-based urban societies.

Bogaard, Amy [189] see Vaiglova, Petra

Boger, Rebecca [100] see Bain, Allison

Boi, Valeria (University of Sassari (Italy))

[4] *Open Access, Data Reuse and the "Democratization Of Knowledge": The Case of Italy*

Open Access (OA) data publication can widen the quantity of data available to researchers and scholars and thus can increase possibilities for cross-cultural comparisons. Low cost and ease of access to data can make possible a "democratization of knowledge." This paper examines the archaeological community in Italy from the perspective of OA data publication in archaeology. OA data publication in Italian archaeology is not widespread and it currently lacks standards on data sharing that can enable reuse. Most crucially, however, licenses for data reuse strongly influence opportunities for using data available through Web-based OA portals and information from different Web sources. This situation is considered through a framework of actors involved in the production of archaeological knowledge, namely, the Ministry of Culture, entrusted with the protection and valorization of Cultural Heritage, universities which are charged with research, and professional archaeologists including freelancers and those employed in private companies. Professional archaeologists carry out the bulk of fieldwork in Italy, yet unlike Ministry archaeologists and those at Universities, professional archaeologists cannot publish their work without authorization from the Scientific Director, usually a Ministry Officer. Interest is growing in publishing field reports but publication of data and its reuse remains limited.

Boileau, Arianne (University of Florida)

[270] *Creatures from the Lagoon: Maya Turtle Exploitation at Lamanai, Belize*

Archaeological excavations at the Maya site of Lamanai, Belize, have resulted in the recovery of more than 10,000 remains of turtles dating from the Late Postclassic to the Early Colonial periods. This abundance of turtle specimens represents a unique opportunity to study Maya turtle exploitation at an unprecedented scale. Preliminary analyses of a sample of 2,400 bones recovered from domestic structures provide information on subsistence practices. The Maya primarily exploited river turtles, with a strong preference for the Central American river turtle (*Dermatemys mawii*) and, to a lesser extent, the Meso-American slider (*Trachemys venusta*) and Mexican musk turtle (*Staurotypus triporcatus*). The practice of dismembering turtles at the junction of the carapace and plastron is attested by the presence of hack and cut marks on the bridge of these two elements. Frequent burning of the exterior of the carapace and plastron also suggests that turtles were roasted and, perhaps, smoked over fire. As proposed by zooarchaeologist Norbert Stanchly, the Lamanai Maya may have practiced turtle husbandry to allow for a steady supply of this resource. Future stable isotopic and ancient DNA analyses may inform this hypothesis.

Boivin, Nicole [223] see Crowther, Alison

Boivin, Nicole (University of Oxford)

[223] *Genetic Insights into Commensal Small Mammal Invasions of Madagascar in Prehistory*

A number of invasive small mammal species, including various commensal rodents, have achieved significant range expansion as a result of accidental transportation by humans. In the Indian Ocean, this is true of the black rat, *Rattus rattus*, the house mouse, *Mus musculus*, and the Asian house shrew, *Suncus murinus*. The spread of these species across the Indian Ocean appears to have been facilitated by the emergence of trading networks beginning thousands of years ago. We conducted molecular phylogeographic investigations of all three species, sampling widely across the Indian Ocean to explore patterns of ancient human colonisation, contact, and trade. Here we focus on data from Madagascar, which suggest that all three species can trace their mitochondrial ancestry to the Middle East. The implications of these findings for our understanding of Madagascar's ecological and cultural history, as well as broader patterns of early Indian Ocean trade and connectivity, are explored.

[223] *Discussant*

[223] *Chair*

Bolhofner, Katelyn (Arizona State University)

[161] *Beyond Trauma and Disease: Examining the Growth and Potential of Bioarchaeological Research in Iberian Medieval Archaeology*

With the advancement of inter-disciplinary research in medieval archaeology in recent decades, much progress has been made in the integration of bioarchaeological data into larger archaeological and historical questions. This growth may be seen in the increase in publications, professional associations, and programs of study focusing upon bioarchaeological research of the medieval period. Yet, particularly in Iberian medieval studies, the contribution of bioarchaeological research largely has remained focused upon diagnoses of pathological conditions and traumatic injury. While this research provides valuable insight into activity and health in the medieval period, there is much room for further contextual analysis and the development of inter-disciplinary research agendas.

This presentation will review recent advances made in the integration of bioarchaeological data sets in Iberian archaeology and will highlight the great potential for growth beyond reports of trauma and disease. As an example of this potential, this presentation will introduce a contextually-specific research framework developed to advance the integration and application of methods from specialized fields in the pursuit of anthropologically driven questions in medieval archaeology.

Bolling, Erik [153] see Bloch, Lindsay

Bollwerk, Elizabeth [7] see Bates, Lynsey

Bollwerk, Elizabeth (The Thomas Jefferson Foundation - Monticello)

[293] *Revisiting Variation in Colonoware Manufacture and Use*

Previous analyses (Cooper and Smith 2007, Smith and Cooper 2011) of Colonoware from 33 sites occupied during the eighteenth and nineteenth centuries by enslaved peoples in South Carolina and Virginia have revealed significant inter-regional variation in vessel abundance over time. Additionally, analyses of attributes such as soot residue and vessel thickness identified intra-regional homogeneity and heterogeneity in use and manufacturing techniques. This study tests whether these trends continue when the dataset is expanded to include five additional archaeological assemblages from South Carolina and two assemblages from Virginia. The patterns are then compared with geographic data on historic period exchange routes (over land and water), locations of Colonial and early American market centers, and variation in size of plantations and their enslaved populations to examine how the availability of wares and proximity to production hubs impacted the manufacture and use of Colonoware.

[293] *Chair*

Bolnick, Deborah A. [64] see Battillo, Jenna

Boite, Christina (University of West Florida), Jay D. Franklin (East Tennessee State University), Nathan K. Shreve (University of Mississippi) and S.D. Dean (East Tennessee State University)

[292] *Luminescence Dates, Archaeological Survey, and Ancestral Overhill Cherokee Towns in Upper East Tennessee*

We have conducted shoreline surveys of archaeological sites on major streams in upper East Tennessee for several years. In 2011, we added luminescence dating to this work. We discuss how luminescence dating has added robust chronological resolution to our work and how it has informed our hypothesis-building efforts. We address the protohistory of the region and the identification of early Cherokee towns here. Before adding luminescence dating as an integral facet of our work, we believed these towns dated no earlier than the seventeenth century. We now know they were in existence by the fifteenth century at the latest.

Bon, François [22] see Ménard, Clément

Bond, Stanley

[33] *Discussant*

Bond, Julie [210] see Mainland, Ingrid

Bond, Julie (AGES, University of Bradford, UK), Julie Gibson (Archaeology Institute, Orkney College, UK), Stephen Dockrill (Archaeological Sciences, University of Bradford, U), Ruth Maher (William Paterson University, USA) and Robert Friel (Archaeological Sciences, University of Bradford, U)

[210] *Understanding Damage Due to Sea Level Rise in Orkney: The Results of Recent Work*

Orkney is a Scottish archipelago, with a maritime cultural landscape spanning some 6,000 years. The archaeological evidence related to this long habitation is amongst the most complete in northwest Europe. Three-dimensional stone architecture and frequently benign soil conditions contribute to very good preservation of individual sites in their landscapes and the UNESCO inscription of The Heart of Neolithic Orkney World Heritage Site recognizes this. A few sites were protected in the last century against marine erosion but more than 900 others remain vulnerable or actually are eroding. How can we mitigate this trend?

Sea level rise since the Neolithic has slowed but is still present, contributing to local inundation. The observable and dramatic increase in erosion resulting from the effects of a steady upward trend in wind speeds in the North Atlantic is discussed at two scales. The first is an archipelago-wide view of current changes and the second discusses the complexities of an individual site and the processes of erosion. Innovative methodologies, including laser scanning the foreshore before and after the winter months, are combined with intensive excavation and recording of the beach and its buried deposits.

Bongers, Jacob [205] see Jones, Terrah

Bongers, Jacob (UCLA Cotsen Institute of Archaeology), Brittany Jackson (UCLA Department of Anthropology), Susanna Seidensticker (UCLA), Terrah Jones (UCLA Cotsen Institute of Archaeology) and Colleen O'Shea (SUNY Buffalo)

[215] *Postmortem Human Body Manipulation in the Mid-Chincha Valley, Peru*

This paper investigates postmortem human body manipulation associated with above-ground and semi-subterranean tombs known as chullpas, which date from the Late Intermediate Period (A.D. 1000–1476) to the Late Horizon (A.D. 1476–1532) in the mid-Chincha Valley, Peru. Mortuary processes involve groups interacting with the dead to negotiate sociopolitical relationships. Groups commonly manipulated human corpses as part of mortuary processes performed cross-culturally. In the Andes, groups culturally transformed biologically dead bodies into socially viable artifacts. Fieldwork performed in the mid-Chincha Valley reveals a large number of chullpas, many of which exhibit evidence of intentional manipulation of human remains including bones with red pigment and reed posts put through vertebrae. Recent analyses of red pigment and over 40 samples of reeds with vertebrae yield new insights into late prehispanic funerary practices and relationships between the living and the dead in the mid-Chincha Valley. Here, we present these data and characterize postmortem human body manipulation performed in this key coastal valley. These funerary practices suggest dynamic, protracted interactions between the living and the dead that played significant roles in the construction of space, place, and sociopolitical relationships during late prehispanic times in this coastal valley.

Bongiovanni, Roseanne [288] see Green, Kirsten

Bonnissent, Dominique (Ministry of culture), Nathalie Serrand (Inrap), Laurent Bruxelles (Inrap), Pierrick Fouéré (Inrap) and Sandrine Grouard (MNHN)

[220] *Island Societies during the Archaic Age in the Lesser Antilles : The Issue of Resources in Saint-Martin*

During the fourth millennium before Christ, the Lesser Antilles archipelago witnessed the development of insular societies. These communities which combined shellfish collection, fishing, submarine and terrestrial hunting, a proto-agriculture and gathering, developed a culture there rather specific to the tropical insular context. A diachronic and detailed study of the settlements over close to four millennia allows detecting an evolution in the human practices, although they appear quite homogeneous at first sight. The social structure of these communities seems to be based on a sophisticated cyclic system of resources exploitation, shaped according to their availability and to socio-economic necessities as well as to the needs of their symbolic world. The concept of archaeoecology is used in this work in order to examine the passed interactions between the maritime hunter-gatherers of the Lesser Antilles, their activities and their environment.

BONNISSENT, Dominique [222] see Serrand, Nathalie

Bonogofsky, Michelle (UC, Berkeley)

[52] *Post-Mortem Manipulation of the Human Skull in the Middle East during the Neolithic Period*

The Neolithic Near Eastern inhabitants of the Levant and Anatolia removed the skulls or crania of females, males, and children after decomposition of the body, ca. 8,500–5,000 B.C. They modeled facial or other features over the disembodied skulls and crania of adults and children using substances such as plaster, marl, or collagen, and then generally painted them, while others were only painted. Many of the skulls and crania, however, display no apparent post-mortem decoration. Some skulls of both types appear grouped according to genetic relatedness and/or show evidence of in-vivo cranial modification. Whether modeled, painted, or plain, the skulls and crania are typically found archaeologically either individually or grouped together without their corresponding postcranial skeletons and in diverse locations regardless of age or sex. This inclusive treatment supports an interpretation of the removal of the skulls and crania as evidence of a complex mortuary ritual that may reflect alternative identities as well as usage and function. This paper discusses the sex, age, cultural treatment, and context of 88+ modeled skulls, as well as other skulls and crania, recovered from 10 sites in Turkey, Jordan, Syria, Palestine, and Israel.

Bonsall, James [80] see Napora, Katharine

Boomert, Arie

[220] *From Foraging to Incipient Horticulture: The Archaic Era in the Coastal Zone and Offshore Islands of Northeast South America*

At the onset of the Holocene scattered small-game hunters, fishers, and foragers occupied the northern South America. Such residentially and logistically mobile groups also traversed occasionally the relatively open landscape of Trinidad, judging from the individual find of a Lithic spearhead of Canaima/Atures type in this island. By then movement from the mainland to Trinidad was still easy due to the existence of a land bridge. Following its flooding as a result of the post-Pleistocene sea level rise, ca. 6000 cal B.C. the island was settled permanently by Amerindians of the Ortoiroid series for whom seafaring and navigating using large dugouts formed part of their cultural heritage. Related groups of hunter-fisher-collector populations are known from Guyana and eastern Venezuela. Starch grain analyses have shown the growing of maize and other probably domesticated food crops by these Archaic communities, the processing of which took place using lithic implements of the 'edge-ground cobble/millingstone complex'. This was the stone toolkit which was to be introduced to the Lesser Antilles by groups of Ortoiroid voyagers about 3500/3000 cal B.C. It is probably no coincidence that simultaneously the Margarita archipelago was settled for the first time by Archaic groups originating on the mainland.

Boomgarden, Shannon (University of Utah)

[104] *Experimental Maize Farming in Range Creek Canyon, Utah*

This paper examines the economic trade-offs between dry farming maize vs. maize farming using simple surface irrigation for Fremont farmers occupying Range Creek Canyon, Utah, from A.D. 900 to 1200. A maize farming experiment was conducted focusing on changes in edible grain yield as irrigation water was varied between farm plots. The benefits of irrigation were clear; higher yields. Experiments designed to construct irrigation ditches and dams, using only technology available to the Fremont, showed unexpectedly low costs. The results of farming under modern environmental constraints were then compared to the Fremont occupation using a tree-ring sequence to reconstruct water availability in the past. The reconstruction showed that dry farming would have been extremely difficult. Archaeological evidence indicates that the Fremont were farming during this period, suggesting irrigation was used to supplement precipitation shortfalls. Large amounts of contiguous arable land, highly suitable for irrigation farming, were identified along the valley bottom. The distribution of residential surface rock alignment features were analyzed to determine whether the Fremont located themselves in close proximity to those areas identified as highly suitable for irrigation farming based on environmental and social constraints.

Booton, Ross [80] see Goldfield, Anna

Borck, Lewis [66] see Swarts, Kelly

Borejsza, Aleksander [55] see Lohse, Jon

Bormann, Edward (Quinnipiac University), Matthew Capece (Quinnipiac University), László Paja (University of Szeged) and Julia Giblin (Quinnipiac University)

[149] *Munsell vs. Hounsfield? A Methodological Comparison in Assessing Cremation Temperatures of Human Bone*

The identification of the temperature at which bone was burned is an important technique for both archaeological and forensic applications that deal with cremated skeletal material. Known color changes in burned bone can be systematically quantified using a Munsell Soil Color Book and associated with known temperature ranges at which the material was burned. Non-invasive techniques, such as computed tomography (CT) scanning may be able to provide analogous information for archaeological material prior to excavation. In this study, we compare Munsell data with "Hounsfield Units" (a measurement of density) from CT scans of cremated human bone from the Bronze Age cemetery Békés 103, located in Eastern Hungary. Preliminary results indicate that the "Hounsfield Unit" values increase with bone that was fired at higher temperatures (as identified using the Munsell technique).

Borrero, Luis (CONICET)**[139]** *Discussant***Bos, Kirsten (MPI, Science of Human History), Alexander Herbig (MPI, Science of Human History), Daniel H. Huson (University of Tuebingen), Noreen Tuross (Department of Human Evolutionary Biology, Harvard) and Johannes Krause (MPI, Science of Human History)****[223]** *Searching for Pathogens in a New World Colonial Epidemic Burial*

While methodological advancements in ancient DNA research have permitted the reconstruction of ancient bacterial genomes, pathogen detection has thus far been limited to capture-based approaches that carry with them a strong ascertainment bias. Such biases are reduced when historical or archaeological contexts implicate a particular disease, but examples of this are rare in the archaeological record. Ancient DNA could serve as an important tool for elucidating the biological consequences of contact between Old and New World populations, though few clues exist to identify infectious diseases thought to have contributed to high mortality in New World populations in the colonial period. Here we apply an approach for the analysis of non-enriched sequencing data that permits a fast and precise assignment of DNA reads to microbial taxa. This circumvents known biases common to capture-based screening techniques. Our experimental design will be discussed with reference to material from the project Pueblo Viejo de Teposcolula Yucundaa, which involves excavations at one of the oldest securely dated post-colonial epidemic cemeteries thus far identified in Mexico. This collection could be instrumental in our ultimate goal of understanding disease exchange in the colonial period, and subsequent genetic adaptation in New World populations.

Bos, Kirsten I. [223] see Krause, Johannes

Boschetto, Kristian [237] see Medina, Paulo

Boswijk, Gretel [56] see Ghezzi, Ivan

Boudreaux, Sarah [27] see Levi, Laura

Boudreaux, Edmond**[137]** *The Mississippian Community at Town Creek*

Archaeological uses of the term "community" incorporate elements of the physical environment, which often include a particular place on the landscape, and elements of the built environment, such as the structures and spaces that people created there. In addition to being a place, the concept of "community" also entails the social, economic, and political relationships that existed among the individuals and groups that lived there. This paper presents an overview of the Mississippian community at the Town Creek site in central North Carolina. Architectural elements of the Town Creek community—which include several public buildings, a platform mound, a central plaza, and a domestic area containing a number of houses—have been fairly well established based on the distribution of archaeological features across the site. This paper will explore the Town Creek community regarding the social groups that created and used these spaces. In particular, individual households appear to have been important groups that persisted throughout the existence of this community, even though the community itself changed significantly throughout its history.

Boulanger, Matt [57] see Correa Giralat, Itaci

Bourdely, Mylène (MNH)**[96]** *Animal Resource Use and Management by Naachtun's Elite*

The Naachtun Project has collected a large faunal assemblage since the first field campaign. This material is analyzed as part of doctoral research focusing on the site's subsistence economy. The analysis is based on specific archaeozoological methods, through which it is possible to identify the different animal remains and draw up a list of the species that were used by the site's ancient inhabitants. Many preliminary issues must be resolved: Which were the acquisition strategies of these different species? What hunting and slaughter practices were used on the most consumed species? Did the people of Naachtun select species and individuals according to their age? Then, more complex questions can be approached, such as the specific use of certain animal species in the ritual and funerary activities, or the existence of a regional organized trade of animal resources. Indirectly, the issue is to evaluate whether the use of certain species is the privilege of a specific powerful group of the society: Naachtun elite. The perspective of the elite will be in fact the main concern of this paper: Which were the main features of the management of animal resources used by the elites of Naachtun?

Bouwman, Abigail [103] see Viganò, Claudia

Bouwman, Abigail (Institute of Evolutionary Medicine, University of Zurich), Michael Habicht (IEM, University of Zurich), Thomas Krämer (Forensics Institute, University of Zurich), Karl Link (IEM, University of) and Frank Rühli (IEM, University of)**[224]** *Divining the Past: The Canopic Jar Project is using Genetics, Chemistry and Imaging to Illuminate Ancient Egyptian Health and Culture*

Whilst ancient Egyptian mummies have been the main focus of research for centuries, ancient Egyptian canopic jars, and their intestinal contents, have been widely neglected. The aim of the Canopic Jar Project is to establish novel research procedures and to examine a larger series of ancient Egyptian human soft tissues samples with a range of medical, genetic, chemical, and Egyptological techniques. In the pilot phase of the project, canopics from different time periods were studied Egyptologically, radiologically (by portable X-ray, Examion PX 60 HF; or by computed tomography, Somatom Definition Flash), and by standard histological techniques such as Hematoxylin and Eosin or Masson-Goldner staining. Mitochondrial DNA consistent with a western Eurasian/northern-African maternal ancestry was successfully amplified, and real-time PCR amplification to assign sex using polymorphisms in the amelogenin genes have been undertaken. In addition, samples underwent high-throughput sequencing (Illumina HiSeq 2500 v4 sequencing). Some pathogenic species were found (e.g., MTBC and Leishmania infantum). Samples were also investigated by gas-chromatography-mass spectrometry and liquid chromatography-high resolution mass spectrometry. The extracts from different canopics showed different chemical compositions, and different

(methylated) fatty acids were also identified.

Here I shall present the data from the pilot study of this interdisciplinary project.

Bow, Sierra (University of Tennessee, Knoxville), Jan Simek (University of Tennessee, Knoxville) and Alan Cressler (United State Geological Survey)

[131] *Non-Destructive Analysis of Pictographs at Painted Bluff: Understanding Prehistoric Paint Recipes in the Southeastern United States*

Analytic methods for prehistoric pigment analyses, especially for rock art, have seen important enhancements over the past decade. In particular, the development of non-destructive, field-portable instrumentation has been transformational. Painted Bluff in Alabama is one of the richest rock art localities in the Southeastern U.S. Initial SEM-EDS analyses there yielded results consistent with prehistoric technology, but this method is destructive and only a limited number of pictographs were therefore analyzed. Here, we report on the in-situ use of several non-destructive techniques on over 30 pictographs to comprehensively characterize the pigment recipes used to produce the pictographs at Painted Bluff.

Bowen, Corey [25] see Blom, Deborah

Bowen, Corey (Vanderbilt University) and John W. Janusek (Vanderbilt University)

[105] *Hydrologic Power: A GIS Approach to Tiwanaku's Constructed Water Landscape*

The conceptual division of urban and rural, like the parallel division of society and nature, consistently dogs attempts to understand the significance of cities in the highland Andes. Critical approaches to this divide, in fields from geography to literature, have had little impact in reformulating assumptions about the character of urbanism in this world region. This paper examines the Middle Horizon city of Tiwanaku, located in the southern Lake Titicaca Basin of the south-central Andes. It emphasizes Tiwanaku's agropastoral and cosmological production as fundamental elements of the city's importance as a center of nucleated residence, recurring ritual, and political influence. Employing GIS analyses of regional hydrology and the city's engineered water features, the paper examines the role of water in the city of Tiwanaku itself. Like stone drawn from local mountains, water was not just iconically or 'symbolically' important, but its dynamic presence, seasonal flow, and immediate materiality formed a critical foundation for Tiwanaku ritual-political power. The paper draws on parallels with other highland cities, notably the Late Horizon imperial Inka center of Cuzco.

Bowers, Jordan

[145] *Calculating Moment of Inertia of Spindle Whorls as a Method for Understanding Iron Age Textile Production*

Excavations of Iron Age hillfort's in Northwestern Portugal, known as castros, have yielded many spindle whorls, but no extant fabrics due to the nature of preservation in the region. This leaves the question "what types of textile were produced?" In an attempt to answer this question, I calculate the moment of inertia (MI) for spindle whorls collected from three different sites in the Ave River Valley. MI represents the angular momentum of a whorl, allowing for the whorls various characteristics, such as diameter and density, to be considered as a single value. Comparing the calculated MI of each whorl in comparison with the shape of each whorl, I attempt to establish clear differentiation between the average values for each type of whorl and connect this with different types of fibers used during the Iron Age in Northwestern Portugal.

Bowers, Kate [187] see DuBois, Erin

Bowman, Robert (University of Alaska Fairbanks; Northern Land Use Research Alaska) and Joshua Reuther (University of Alaska Museum of the North)

[124] *Environmental Changes in Archaeologically Significant Sand Dunes in Subarctic Interior Alaska*

Environmental changes, presently and prehistorically, are important factors which influence the expression of the archaeological record in subarctic sand dune environments. Current environmental changes (e.g., vegetation loss, shifts in aridity) affect preservation and associative contexts of the archaeological and paleoenvironmental records. Prehistoric environmental factors and post-depositional changes in these geological settings also played a role in how humans decided to use dune fields, as well as disturbance to the archaeological record, throughout different local and global climatological oscillations. This paper will present data collected from several archaeological and non-archaeological locations among dune fields located within the middle Tanana valley area of interior Alaska. Several stratigraphic records in this region indicate that environmental changes over the last 10,000 years have influenced both dunal landscapes and the site building processes through vegetation loss, sediment depletion, and other site disturbances. We discuss how our interpretations and reconstructions of local paleoenvironments and human behaviors are influenced, even distorted, by time and space scalar issues and geomorphic change within these types of subarctic dunal environments.

Bowman, R Doyle, Thomas Gruber (Open Range Archaeology) and Sonya Beach (Open Range Archaeology)

[140] *UAS Vehicles (Drones) and the Documentation Rock Art Effigies on the Great Plains*

The identification and documentation of anthropomorphic rock art effigies on the Great Plains of North America has long been a compelling yet understudied area of research for archaeologists and anthropologists. The recent advent of new technologies, like UAS vehicles (Drones) have enabled new ways for researchers to gather data on such sites and identify locations adapting photogrammetric and remote sensing techniques alongside traditional site documentation practices. The research presented here examines both practical benefits and potential limitations encountered with the use of a UAS vehicle to document on particular site, the "Penokee Man" horizontal rock art effigy site in northern Kansas. This initial research also explores the connections between and among similar rock art effigy sites and the relationship of such sites to greater themes of cultural identity and sacred landscapes on the Great Plains of North America.

Bowser, Brenda [292] see Ozorio De Almeida, Fernando

Boyd, Carolyn [131] see Roberts, Jerod

Boyd, Carolyn (Shumla/Texas State University) and Timothy J. Murphy IV (Shumla Archaeological Research & Education Center)

[131] *Strat is Where its at: Analyzing and Managing Complex Mural Stratigraphy at Rattlesnake Canyon, TX*

Pecos River style murals are highly-ordered, complex compositions of layered figures composed of different pigments. Through analysis of sequential ordering and stratigraphic relationships of these figures, researchers can gain insights into the technical history of a mural and the artistic and cognitive processes that led to its creation. The Pecos River style mural in Rattlesnake Canyon spans 32 meters and contains more than 250 finely-executed, polychromatic figures. Shumla is investigating the technical history of this mural by capturing stratigraphic data through digital field microscopy and development of Harris Matrices. Using these tools, Shumla is not only developing new standards for identifying and managing layered pigments in complex rock art murals, it is revealing a sophisticated network of relationships within and among rock art figures. The larger context of mural stratigraphy provides evidence for a greater complexity of painting style and deliberately executed compositions planned by Archaic hunter-gatherers.

Boyd, Charles (Radford University) and Donna Boyd (Dept. of Anthropological Sciences, Radford University)

[247] *Archaeological Inference and the Concept of Culture*

To anthropologists (as most North American archaeologists consider themselves to be), the ultimate goal of anthropology is the understanding of human cultures. Archaeologists define past cultures through the repeated clustering of specific sets and types of material objects and features in space and time. However, are archaeologists (and cultural anthropologists, for that matter) truly able to reconstruct and “see” that “complex whole” that Edward Tylor defined as culture in the nineteenth century? In this paper, we describe “culture” as a supranatural concept that is not easily explained or defined through inferences derived from the observation of material objects or remains. Instead, what archaeologists and other observers of humans are seeing is human behavior—something that can be observed and quantified to derive patterns. For archaeologists, this behavior can only be modeled by moving through several levels of inference and cannot be used to define a “culture,” except in a very limited and perhaps stereotypical sense. The term “culture” should therefore be considered an abstract concept, not an objective reality. We illustrate this point by discussing several archaeological examples of behavioral change and variability within “cultures” from the southeastern United States.

Boyd, Carolyn [131] see Vermillion, Lindsay

Boyle, Tristan [35] see Webster, Chris

Boytner, Ran [92] see Barnard, Hans

Bracken, Justin (CUNY Graduate Center)

[291] *Ramparts and Channels: Defensive and Hydraulic Architecture at Muralla de León*

The ongoing project at Muralla de León is investigating the relationship between defensibility, water control, and emergent social complexity in the Petén Lakes Region. Located on the shores of Lake Macanché, recent excavations at the site have zeroed in on the imposing rampart which encircles it, providing evidence for the chronology, as well as the nature, of its construction. Mapping of the site has turned up strong indications of hydraulic architecture both within and outside of the rampart. Though a relatively small site in terms of area, these constructions represent a massive contribution of labor, much of which appears to date as far back as the Late Preclassic period. Thus, this work addresses a series of questions: What was the role of warfare in this era of incipient urbanism among the Maya? How did water control factor in to their spatial planning decisions? What kind of labor budget was needed to complete the job, and who were these workers and under what arrangement were they laboring in this time of increasing social inequality? Finally, how were people living in and using the site?

Brad, Chase (Albion College), Brad Chase (Albion College), David Meiggs (Rochester Institute of Technology) and P. Ajithprasad

[134] *Land-use and Social Networking of the Indus Civilization Explored with Stable Isotopes in Faunal Remains*

The region of Gujarat was the southernmost extension of the Indus Civilization (2600–1900 B.C.), south Asia’s first experiment with urban society. In this region, distinctively Indus material culture was made and used at a series of small, monumentally walled manufacturing and trading centers situated along coastal trade and travel corridors that have often been interpreted as colonies established to facilitate the exploitation of the region’s rich natural resources. With the decline of Indus urbanism, these centers were largely abandoned, and settlement in the region came to be reorganized around inland towns. Here, we present stable isotopic data from faunal remains at a series of settlements spanning this period of momentous social change. Providing rich information on continuity and change land-use and social networking strategies through time, our findings lead to a powerful new perspective on the socioenvironmental dynamics of the Indus Civilization in this important region.

Braden, Elizabeth (University of Oklahoma)

[145] *Coins of the McGhee Collection*

Coins in the ancient world provided a medium for the propaganda of rulers and other influential individuals. Analysis of coins alongside an understanding of their historical context can reveal their significance. In 2014, the Sam Noble Oklahoma Museum of Natural History received a donation of assorted Greek, Roman, and Byzantine coins from Ambassador George C. McGhee. This project analyzes and catalogues these coins by translating their inscriptions and interpreting their images to determine their age and significance. Presented here is a selection of these coins with their translations, historical context, and the propagandistic messages they intended to convey.

Brady, James [93] see Poister, Nicholas

Brady, James (Cal State L.A.)

[294] *Reconsidering Sacred Landscape in a Small Depression at Dos Hombres, Belize*

Dos Hombres, a Maya site in the Programme for Belize (Pfb) conservation area of northern Belize, consists of three large architectural groups aligned in a north-south direction along a series of knolls. Where the southern end of Group C meets the surrounding bajo, a depression in small knoll protruding from the bajo yielded evidence of Maya utilization from the Late Preclassic through the Late Classic. The underlying bedrock was modified to create an amphitheater shape focused on a small cave at the eastern end of the depression. It appears that a termination/desecrations event ended the utilization of

the feature during the Late Classic with the roof of the cave being partially collapsed.

[294] *Chair*

Braje, Todd (San Diego State University), Jon Erlandson (University of Oregon), Kristina Gill (University of California, Santa Barbara), Christopher Jazwa (The Pennsylvania State University) and Nicholas Jew (University of Oregon)

[55] *Social-Ecological Resilience on California's Northern Channel Islands: The Trans-Holocene Record from Paleocoastal Mariners to Complex Hunter-Gatherers*

For more than 12,000 years, the Chumash and their ancestors thrived in a maritime hunting and gathering existence on California's Northern Channel Islands. Despite a dearth of terrestrial game, growing populations, and major changes in climate and geography, the resilience of these maritime hunter-gatherers across the Holocene is remarkable, with only limited evidence for long-term human impacts, extinctions, or abandonment until the arrival of Europeans. Trans-Holocene archaeological sequences from the islands, coupled with paleoecological records of sea level change, sea surface temperature fluctuations, and precipitation changes, suggest that the Chumash employed a variety of adaptive strategies, including mobility, resource switching, socio-political reorganizations, technological innovations, and long-distance trade networks to promote socio-ecological resilience in delicate island ecosystems. The Holocene history of their relatively sustainable occupation of the islands stands in contrast to the dramatic and rapid collapse of post-colonial land and seascapes in southern California.

Braje, Todd [296] see Rick, Torben

Brandt, Steven (University of Florida)

[22] *Parting the Late Pleistocene Red Sea: An Introduction to the Session and Region*

The Late Pleistocene dispersal of *Homo sapiens* and "modern human behaviour" through and out of Africa has become a key issue in human evolutionary studies, largely as a result of intensive archaeological research in southern, and to a lesser extent east and northern Africa. In spite of its remarkably diverse environments, earliest *Homo sapiens* fossils and strategic location straddling the postulated "Northern" and "Southern" dispersal routes, the Horn of Africa (Djibouti/Eritrea/Ethiopia/Somalia) has contributed little to understanding how, where, when, and why Late Pleistocene hunter-gatherer groups left (and returned to) Africa. Arabia has also suffered from a dearth of archaeological research, in spite of a postulated major conduit (and barrier) to Late Pleistocene *Homo sapiens* movements from Africa into Eurasia. Recent surveys/excavations have dramatically altered the region's Late Pleistocene archaeological map, and have revealed extensive and surprisingly diverse MSA-LSA/MP-UP lithic assemblages. Here we provide an introduction to the region and major theoretical/methodological issues the session draws upon to study this lithic variability as a means of reconstructing Late Pleistocene hunter-gatherer dispersals and demographic changes. We conclude by using lithic variability at Mochena Borago rockshelter to test a theory that SW Ethiopia was a major environmental/social refugium during OIS 4~72-59 ka.

[22] *Chair*

Brannan, Stefan (University of Georgia) and Jennifer Birch (University of Georgia)

[137] *Multiscalar Community Histories: A Tale of Migration, Aggregation, and Integration in the Lower Chattahoochee River Valley*

Mississippian archaeology has benefited from historicized approaches which situate communities and their constituent parts within larger socio-political landscapes, rather than treating them as bounded or normative entities. In this paper, we explore historical and socio-political dynamics within the community centered upon Singer-Moye, a large (30+ ha) mound center located in the lower Chattahoochee River valley. Our analyses combine archaeological and geophysical data from mound and off-mound contexts to generate an occupational history for Singer-Moye. This history included initial occupation at discrete locations, integrative activities, the demarcation of restricted and public spaces, defined residential loci, and episodes of population aggregation and dispersal. When situated in meso- and macro-regional histories of interaction and exchange, a narrative emerges which illustrates how the Singer-Moye community contributed to and was influenced by larger processes of socio-political change.

Brantingham, P. Jeffrey (UCLA) and Charles Perreault (Arizona State University)

[69] *Where is the Evidence for Selection?*

Few dispute that the Tibetan Plateau represents one of the harshest environments on the planet. It is reasonable to expect that human colonization of the Plateau entailed exposure to strong selective pressures. Successful colonization of the Plateau therefore implies the development of adaptations in response to these selective pressures. Genetic, physiological, and morphological data from Plateau populations are consistent with a general model for biological adaptation under strong selective pressures. By contrast, archaeological data collected over the last two decades is remarkable for the paucity of evidence suggesting major shifts in behavior and technology accompanied the colonization of the Plateau. With few exceptions, Plateau behavioral adaptations appear to be close variants of those common in low-elevation settings. Why is there so little evidence for cultural selection? Here we examine several alternative hypotheses explaining this perplexing problem.

Bratton, John (University of West Florida)

[83] *From Excavation to the Laboratory: A Multi-faceted Analysis of the Emanuel Point Shipwrecks*

The first Emanuel Point Shipwreck was discovered in 1992 and the second, Emanuel Point 2, was discovered in 2006. Both of these vessels have been firmly associated with a 1559 colonization attempt of what we know today as Pensacola, Florida. In addition to the archaeological excavation and historical research given to both vessels, many specialized types of analyses have been undertaken to paint a more complete image of this sixteenth-century Spanish endeavor to gain a foothold in La Florida. These have included lead isotope analysis, artifact chemical characterization (NAA, XRF, CIMS, and GC/MS), ballast characterization (multi-element geochemical analysis and Ar-Ar dating), macro- and micro-botanical identifications, and zooarchaeological analysis. This paper will present a synthesis of this work, much of it undertaken by graduate students from the University of West Florida.

Braun, David [177] see Hlubik, Sarah

Bravo, Jorge [57] see Delgado, Mercedes

Bray, Tamara (Wayne State University)**[99]** *Partnering with Pots: The Work of Materials in the Imperial Inca Project*

New understandings of matter and materiality are being driven by recent theoretical developments in the realm of science, particularly physics and ecology. These evolving orientations are, in turn, contributing to new philosophical thinking on the nature of being and reality. The trickle-down effects of these developments are, in part, responsible for what has been termed "the ontological turn," a trend that is clearly visible in recent archaeological discourse. The new materialist ontology, in combination with relational and symmetrical approaches to analyzing the social, open the door for imagining ontologies different from our own. Focusing on the kinds of world-making and world-sustaining practices potentially discernible in the archaeological record may point us in the direction of alternative ontologies. In this paper, I work from the basis of the imperial Inca ceramic assemblage to consider whether and how such material entities may have been deployed in the task of empire-building and what insights they may provide into native Andean ontology during the late precolonial period.

Breiter, Sarah (University of Sheffield)**[145]** *After the Dissolution: The Second Life of Monastic Stones*

One of the more dramatic results of the English Reformation was the Dissolution of the Monasteries. Once these institutions were closed and sold off, they often had a secondary purpose for the new landholders, such as working farms, personal residences, and colleges. In spite of this, much of the architecture of the original monastery was destroyed, with stone, brick, and metal carted off. This paper focuses on how the stone from monasteries became a resource in the immediate vicinity of the former monasteries. Using Thornton Abbey in North Lincolnshire as a case study, the displaced monastic stones were recorded and analyzed based on: their current use, the type of property where the stones were found on, and, if possible, the original architectural function of the stone.

The study reveals that the stone's reuse was linked to property type. For example, older, agricultural properties had the largest quantity and variety of reused stone. This study determines that monastic architectural stone did not go to waste, and was an important resource for the local populations in the area.

Brennan, Candice**[110]** *Prehistoric Subsistence and Settlement Patterns in the Los Alamitos Bay Region of Southern California*

The prehistoric population of the Los Alamitos Bay area made significant use of local shell fish resources. Using records of shellfish species found in shell middens, information about habitats for shell fish species, sea level records for the Holocene, and a detailed topographic model of the region, one can examine how prehistoric use of the landscape changed as a function of the post-Pleistocene environment.

Brennan, Tamira**[137]** *Making Mounds, Making Communities in the Mississippian Period Midwest*

Community is an expandable concept, at once representing social groups from scales as small as the household to those as broad as pathways of communication. This paper highlights the importance of examining archaeological data at these multiple spatial scales, but also at various scales of time, in order to more fully explore the social and historical processes that directed community development along their varied courses. Examples from several Mississippian period mound centers in the American and Black Bottoms of southern Illinois (ca. A.D. 1050–1450) illustrate how daily and repeated engagements between people, places, and things actively made, maintained, or re-forged communities.

Brenner, Mark (University of Florida)**[55]** *Discussant***Bretzke, Knut (University of Tuebingen)****[22]** *What does the Paleolithic Record of Southeast Arabia Tell us about Hominin Dispersals Out of Africa?*

The southern route for human dispersal out of Africa has moved from being a hypothetical idea to being considered a plausible path of human expansion. Fundamental for this development is the intensified field work in Arabia over the past decade. The stratified Paleolithic assemblages from Jebel Faya in the Emirate of Sharjah, U.A.E. play a critical role in this context. Given that Jebel Faya is separated from the African coast of the Red Sea by about 2,000 km, the questions arise: What Jebel Faya can tell us about hominin dispersals out of Africa? Will comparisons of archaeological materials over such distances allow us to draw conclusions about connections between East Africa and SE Arabia? Using assemblages from my excavations at Jebel Faya as a case study, I argue in this talk that diachronic studies about hominin behavior, including land use, raw material economy, and intrasite organization, contextualized within the regional paleoenvironmental setting provide a promising set of data for the identification of periods of population influx, continuity, and extinction in the studied region. Building such models for multiple regions along the hypothetical expansion paths would allow us to gain a better understanding of the complexity associated with hominin expansion processes.

Brewer, Katherine**[65]** *Tiles, Tourism, and Museums: Changes in Historic Ceramic Tiles in the Southwest since the Late 19th Century*

From the late nineteenth century to the present, Pueblo potters created ceramic tiles for sale to museums, tourists, and trading posts. Analysis of historic ceramic tiles from collections at the School for Advanced Research and the Museum of Indian Arts and Culture, both in Santa Fe, show a pattern for the tiles based on comparisons of tile dimensions, including length, width, and diameter, and tile decorations with the cultural affiliation of the artist, the artist themselves, and the decade in which the tiles were made. The tiles are thus a reflection of change over time and between groups as the demands of Euro-Americans and museums changed.

Brewer, Jeffrey (University of Cincinnati) and Chris Carr (University of Cincinnati)**[121]** *Preliminary LiDAR Analysis and Excavation of Residential Water Features at the Ancient Maya Site of Yaxnohcah, Central Yucatan*

The collection, storage, and management of water was an ongoing challenge—and necessary focus—for the ancient Maya, who occupied a physical environment with a pronounced annual dry season and a general lack of perennial surface water necessary to support and sustain an expansive

population. The urban center of Yaxnohcah, located within the central lowlands of the Yucatan Peninsula, provides an ideal test case for studying how the residents of this important Maya center managed their crucial, and ephemeral, water resources. We employ an interdisciplinary approach combining LiDAR analysis and excavation data to examine the spatial characteristics, cultural modifications, and functional nature of residential-scale water tanks—a little-investigated component of Maya water management. Small reservoirs were an adaptive component of expanding Middle Preclassic to Classic period urbanization at the site, and appear to have played a significant role in the unified hydraulic system linking hinterland settlement to the urban core of Yaxnohcah.

Brewer, Jeffrey [162] see Dunning, Nicholas

Bria, Rebecca (Vanderbilt University)

[56] *Local Ritual and Social Change in the Andean Formative Period at Hualcayán, Peru*

Research in the Andes has long focused on how early complex societies performed elaborate rituals in monumental spaces to both organize communities and establish authority. In pursuing this research for the Formative Period (1800–1 B.C.), comparisons between local ritual practices and the regional traditions of Kotosh and Chavín have overshadowed the study of how and why communities selectively altered and replaced ritual practices over the long term. For example, how did different generations modify local rituals to address or enact social change in their community?

This paper explores this question by examining how the people of Hualcayán—a Formative village and temple in highland Ancash, Peru—performed their rituals over nearly two millennia. It focuses attention on the particular moments in which they modified their ritual spaces and practices, weaving together evidence from architectural, material, and food analyses. These data are used to illuminate how and why the people of Hualcayán transformed the way they interacted through ritual, and in consequence, reconstituted their community to emphasize at certain times social integration and at other times exclusivity and group membership. In so doing, the paper highlights the dynamic relationship between local ritual practice and social change during the Andean Formative Period.

Briceno, Jesus [122] see Bardolph, Dana

Bridgman Sweeney, Kara [243] see Sweeney, Alex

Briggs, Rachel (University of Alabama)

[225] *The Everyday of the Hominy Foodway: Changing Lifeways During Early Moundville*

Between A.D. 1120–1260, in the Black Warrior River Valley of west-central Alabama, a Mississippian identity first began to take shape that ultimately led to the materialization of the civic-ceremonial center of Moundville. While traditional models hold that feasting played an important role in this process, in this presentation, I propose that the adoption of an ancestral hominy foodway during this formative period restructured everyday household activities, seasonal procurement strategies, and other lifeways, many of which are hallmarks of the Mississippian expression made manifest throughout Moundville's history. To demonstrate this, I draw principally on the results of an experimental archaeological component designed to articulate the everyday experience of hominy making by utilizing replica materials, as well as the results from a recent ceramic analysis of Late Woodland and Early Mississippian sites within the Black Warrior River Valley.

Brilliant, Brooke [293] see Young, Stacey

Brin, Adam and Leigh Anne Ellison (Center for Digital Antiquity)

[9] *Beyond Archiving: Synthesizing Data with tDAR*

The future of archaeological research is dependent on our ability to synthesize data across sites and leverage both current and legacy data. Asking questions of regions or clusters of sites where data was recovered over decades or centuries and by multiple researchers becomes difficult without significant, manually-performed normalization and standardization processes at a great impediment to synthetic research. Beyond archiving, tDAR provides integration tools to extend the lifespan of archaeological data and promote reuse. This allows users to map and translate data dynamically and easily bring together data across sites, regions, and quickly iterate over research queries. This poster presentation describes the tool and how it can be used to pursue synthetic research.

Brin, Adam [261] see Ellison, Leigh Anne

Briones, Claudia [272] see Lanata, Jose

Briseno, Monica [93] see Chickanis, Caius

Britt, Tad

[33] *Discussant*

Britt, Krystal (University of Illinois at Chicago)

[289] *The Multi-Kiva Site: Migration and Interaction in Northern Arizona during the Pueblo III Period*

The Multi-Kiva site (AZ P:3:112 [ASM]), situated on the Colorado Plateau in Northern Arizona provides insights into the ways that groups interacted and negotiated their place on the landscape during migration. The Middle Little Colorado River Valley region has traditionally been characterized in the Pueblo

III (1125–1275 C.E.) period by dispersed pithouse settlements. Recent investigations have illuminated the presence of masonry pueblos in the Middle Little Colorado River Valley during the P-III period which bear architectural similarities including large, double coursed masonry walls, formalized plaza spaces, enclosing compound walls, and large room sizes. Even within the context of this recently recognized settlement pattern, however, the Multi-Kiva site appears anomalous. With an estimated 30–40 rooms and areas of two story architecture, the Multi-Kiva site is thus far the largest pueblo identified in the region during the P-III period. This paper seeks to contextualize the Multi-Kiva site within larger regional processes of migration and social interaction that characterized the P-III period.

Britton, Emma

[66] *Results of Petrographic and NAA of Ramos and Babicora Polychromes from Across the Casas Grandes Region*

Whereas past studies have suggested that some Casas Grandes polychrome types are more common in some geographic areas than others (see Brand 1935; De Atley 1980; Findlow and DeAtley 1982; Kelley et al. 1999; Larkin et al. 2004 for more complete discussions), these studies have been challenged as they assume polychromes recovered are made locally, rather than imported from other sites (Douglas 1995; Minnis 1984, 1989). As a result, recent studies refocus on polychrome production (Carpenter 2002, Sphren 2003, Woosley and Olinger's 1993). In my presentation, I will discuss the results of petrographic and NAA of polychrome sherds from Sayle's 1936 surface collections, which is geographically extensive, extending from southern New Mexico, eastern Sonora, to central Chihuahua. Sayle's (1936) collection will be utilized to determine the extent, strength, and directionality of human relationships across the Casas Grandes region. Characterization studies, like petrographic analysis and NAA, aid in my understanding of variability of standardization of paste-temper across the region, helping to determine past communities of practice and networks of knowledge. As single method studies have been most common, in the past, coupling petrographic and NAA data may help clarify many of the intermittent, contradictory interpretations that currently exist in the literature.

Brock, Fiona [290] see Ostapowicz, Joanna

Brodie, Neil

[10] *Globalization and Heritage Values*

The existence of different heritage values is well-established. For centuries, cultural objects have been looted or stolen because of their heritage value, in particular because of their value as art objects. Cultural heritage sites have suffered accordingly. In the rapidly globalizing world of the late-twentieth and early twenty-first centuries, however, a new set of fundamentalist values relating to ethnic and religious identity have been foregrounded, with no less damaging consequences. Cultural objects are now targeted because of their perceived religious or ethnic affiliations. International public policy has been slow to recognize this changing terrain of heritage valuation and is struggling to contain the problem. This poster will explore the immanence of globalization in heritage valuation and the prospects for public policy.

Brodie, Laura [97] see Palumbo, Scott

Brooks, Alison (George Washington University), John Yellen (National Science Foundation), Andrew Zipkin (University of Illinois), Laure Dussubieux (Field Museum of Natural History) and Potts Rick (Smithsonian Institution)

[13] *Early Worked Ochre in the Middle Pleistocene at Olorgesailie, Kenya*

Excavation of the Middle Stone Age site of GOK-1 at Olorgesailie (2001–2011) yielded two pieces of iron-rich rock from a well-developed red soil below a tuff dated to 220 ka. The soil's stratigraphic position in the G locality and the associated lithics suggest it is more comparable to some of the earliest Middle Stone Age sites in nearby Locality B, which date to over 300 ka. The larger rock exhibits grinding striations exposing powdery red pigment. Furthermore, an incomplete perforation was bored into this stone from two directions. Chop marks in the bases of both opposing holes indicate human agency with a sharp tool. Chemical analysis was carried out at The Field Museum of Natural History using minimally destructive LA-ICPMS. The results confirmed that the stones were not grindstones with pigment residue but were themselves pigmentaceous. LA-ICPMS analysis of ochre samples from the nearest source (Mt. Olorgesailie) showed that the rocks were not derived from this locality. Further analyses of ochre sources in Kenya currently underway may identify a more distant source of the GOK-1 pigment. This find constitutes the oldest documented transport and utilization of ochre in east Africa, as well as the oldest attempted perforation.

Brooks, Alison [22] see Yellen, John

Brotherson, David [74] see Stark, Miriam

Brouwer Burg, Marieka

[174] *It Must Be Right, GIS Told Me So! Questioning the Infallibility of GIS as a Methodological Tool*

While the benefits of GIS are widely touted among archaeologists today, less attention has been paid to the potential pitfalls and drawbacks of this undeniably important methodological tool. One of the greatest challenges of geospatial modeling is unbalanced data; due to the nature of the archaeological record, we can never assume that the remnants of past behavioral processes we are working with constitute a fully representative sample. Rather, our datasets are reflective of differential social and natural preservation conditions, as well as research biases. Most regional geospatial studies must collate diverse data collected over decades by researchers with varying backgrounds and goals, using assorted spatial scales and levels of technological sophistication. Such factors contribute substantial uncertainty to our models, uncertainty that should be recognized, quantified, and mitigated. If GIS techniques are to continue shifting the way we conduct archaeology and improve our abilities to answer questions regarding past behavior, then we must question the infallibility of GIS as a methodological tool and direct more attention toward developing robust geospatial applications that can meet the idiosyncratic needs of archaeological analysis. This paper explores one such example of how such uncertainty investigation can be conducted.

[174] *Chair*

Browman, David (Washington University)

[178] *Discussant*

Brown, Linda A. [27] see Wright, Joshua

Brown, Linda (The George Washington University)

[32] *Communicating Objects and Cultural Preservation among Contemporary Tz'utujil Ritual Practitioners*

A unique building (Structure 12) excavated during the early 1990s was interpreted as a divination house serving individuals living in the agricultural community of Cerén, based on its unusual architectural features and enigmatic artifact assemblage. The latter was composed of bits-and-pieces of mostly broken, worn, or repurposed items, some of which showed physical evidence suggesting they were collected from a discard context or dated to an earlier time period. The similarity between this unusual archaeological assemblage, and the practice of collecting sacred materials by contemporary Maya ritual specialists in the Guatemalan Highlands, formed the basis for my on-going research into the meanings and uses of archaeological materials by descendant communities. Contemporary Tz'utujil Maya ritual practitioners collect and curate artifacts, as well as other objects, as animate sacred materials. These charismatic items are attributed aspects of personhood by their human curators, and function as communicating objects. Individuals and sacred objects enter into reciprocal relationships with one another based on mutual caretaking. In this paper, I focus on how close relationships developed in such interactions serve an important role in the preservation of traditional Tz'utujil ontologies and cultural knowledge functioning, in the process, to moderate some of the intrusive forces of globalization.

Brown, Kelly (Simon Fraser University), Barbara Winter (Simon Fraser University), Chen Shen (Royal Ontario Museum) and Dongya Yang (Simon Fraser University)

[38] *Developing Minimally Destructive Protocols for DNA Analysis of Museum Collection Bone Artifacts*

Ancient DNA (aDNA) analysis has revolutionized the field of archaeology with its ability to provide unique and otherwise unattainable information about the past. However, due to the destructive nature of current aDNA techniques, many museum curators are hesitant to subject their collections to this kind of analysis. This poster presents a new sampling strategy for obtaining adequate amounts of bone powder from bone artifacts for aDNA extraction, while minimizing the damage done to the valuable artifacts. A low speed drill should be used as it offers greater control and maneuverability during the drilling process. This is a major advantage as drilling angle, depth, speed, and pressure are major considerations. X-ray imaging should be used to examine the internal structure of the artifact in order to assess its stability and to identify the optimal drilling location and depth. We believe that the low drilling speed, small drill bit size, and the use of X-ray imaging will reduce the likelihood of any unintentional damage being done to the internal or external structure of the artifact. This strategy has been tested and optimized on many archaeological bone artifacts curated in the SFU Museum of Archaeology and Ethnology and the Royal Ontario Museum.

Brown, William (Department of Anthropology, University of Washington) and Ben Hanowell (Redfin Corporation)

[38] *Everything is Not Yet Lost: Modeling Taphonomic Bias in a Bayesian Survival-Analytic Framework*

The time-transgressive loss of archaeological, paleontological, and other geological deposits to destructive geomorphic processes has been parametrically modeled by T. Surovell and colleagues (2009), with minor revisions offered by A. Williams (2012). We expand on these modeling efforts in an explicitly survival-analytic framework, employing analytical techniques tailored to the study of time-to-event processes and data. First, we show that Surovell and colleagues' model is in fact a reduced (two-parameter) form of the Lomax survival model. Then we refit this reduced Lomax model through Bayesian inference to the same terrestrial record of global volcanic deposits employed by Surovell and colleagues and by Williams, basing our parameter estimates on the maximum a posteriori (MAP) estimator and highest-probability credible region. We further expand these modeling efforts by fitting both the two-parameter Weibull model and its reduced (one-parameter) negative exponential form to the same volcanic data set. Model selection based on the Bayesian information criterion (BIC) favors the Weibull model over both the negative exponential and the reduced Lomax model. Implications of the fitted Weibull model for the robust correction of archaeological temporal frequency distributions (tfds) are considered.

Brown, Andrew (University of North Texas), Lisa Nagaoka (University of North Texas), Feifei Pan (University of North Texas) and Steve Wolverton (University of North Texas)

[65] *An Evaluation of Modeling Soil Moisture and Crop Growth at Fine Spatial Scales in the Mesa Verde Region, Southwestern Colorado*

Soil moisture can have profound impacts on crop success and failure. Although soil moisture can be modeled at multiple spatial scales, most studies rely on remotely sensed data that are at resolutions of 1-km or greater, where soil moisture is averaged or interpolated within spatial units. However, crop growth can vary considerably across even small distances. The effects of soil moisture on growth variability at finer resolutions have not been thoroughly studied. Therefore, we are developing a hydrological model to calculate soil moisture at a 10-m resolution. In this study, we evaluate variability in soil moisture and its impact on crop growth to validate our model in a 15-m by 13-m experimental maize garden located at Crow Canyon Archaeological Center (CCAC) in southwestern Colorado. Soil moisture and temperature data were recorded from three sensors within the garden; in addition, Leaf Area Index and physical measurements were taken from the individual maize stalks over the course of one growing season. By evaluating the accuracy of modeled soil moisture at different scales in comparison to the field collected data, we can further refine and validate the model's ability to generate an accurate representation of the potential for crop failure.

Brown, M. Kathryn (The University of Texas at San Antonio)

[109] *Discussant*

Brown, Kaitlin (University of California, Santa Barbara)

[110] *Classifying Soapstone Cooking Pots in the Santa Barbara Channel Region*

The Chumash manufactured cooking vessels using soapstone from Southern California quarries for thousands of years, especially between A.D. 1500 and 1804. These vessels have been recovered in a variety of shapes and sizes, ranging from small cups to large ollas with small orifices that stand over two feet tall. Hundreds of Chumash soapstone cooking vessels were collected by early antiquarians in California and are curated in museums throughout North America with little information regarding their provenience. Since the majority of the vessels were recovered from multicomponent sites occupied pre- and post-European contact, the biggest challenge for archaeologists has been determining when the vessels were intensively used. It is still unclear whether they were rigorously manufactured pre-contact (before 1542), during the first phase of contact by Spanish explorers (1542–1782), or almost exclusively during the later mission period (1782–1834). Using a formal typology, these vessels will be seriated to identify their temporal relationship. Radiocarbon dating will be used to provide context, and data drawn from this analysis will be used to look at change and continuity through time and across space.

Brown, James (Central Washington University), Caitlin Limberg (Central Washington University), Anne Parfitt (Central Washington University), Patrick Lewis (Central Washington University) and Patrick McCutcheon (Central Washington University)

[148] *A Statistical Analysis of the Spatial and Temporal Components of the Sunrise Ridge Borrow Pit Site (45PI408), Mt. Rainier, Washington*

Understanding the change of artifact frequencies through time and across space at the Sunrise Ridge Borrow Pit site is essential to testing hypotheses about settlement and subsistence in the Pacific Northwest. Some problems associated with intra-site time-averaging were controlled with intensive chronological analysis and volumetric control of artifact bearing sediments. Initial differences in analyzed artifact frequencies reveal a decrease in technological diversity and an increase in functional diversity through time. While the differences are intriguing, the effects of time-averaging are obvious as each temporal component is not comparable in duration. The raw artifact frequency of each component was converted into density data in order to compare the volume of excavation per component. The density of artifacts in the upper component is 1,739 lithics per m³ while in the lower component there is a density of 581 lithics per m³. The upper component dates to 2000–1000 cal. years B.P. and the lower component dates to 4000–2500 cal. years B.P. The greater technological diversity earlier in time and more abundant functional diversity later in time are at least in part a function of significant changes in the duration of land use between the two components.

Brown, Clifford (Anthropology Dept., Florida Atlantic University)

[163] *Pottery of the Department of Chinandega, Nicaragua: Sequence, External Connections, Ethnicity, and Migration.*

I summarize the archaeological ceramics recovered from our excavations in the Department of Chinandega, in northwest Nicaragua. Our analysis is still in an early stage, and we have studied mainly collections from sites on the coastal plain, in the southern half of the Department. We have found Late Preclassic ceramic assemblages intimately linked to those described for Quelepa, Chalchuapa, and Santa Leticia in El Salvador. We have also found Terminal Classic to Early Postclassic assemblages with links to southern Mesoamerica, as illustrated by the presence of Las Vegas Polychrome and Plumbate ware. We have so far identified only a few examples of Classic Period pottery, such as Chaparrastique Red-on-orange and Campana Fine Line Polychrome. We have developed a partial ceramic sequence for the region. The links to the Maya area are surprisingly strong in the Preclassic, while links to southern Mesoamerica continue throughout the sequence. I discuss ceramic evidence for the Epiclassic Chorotega migration to the area.

[163] *Chair*

Brown, Erin (Carson National Forest), Linda Popelish (Cibola National Forest) and Steve Owen (Cibola County Historical Society)

[267] *Airway Beacons: Rehabilitation and Interpretation*

Early airway beacons, which marked transcontinental flyways, may not be what you first think of when you see the term archaeology but they are a part of our broader history as a nation, and as historic structures or sites can be eligible for the National Register. In order to preserve a key piece of recent national history, two Passport in Time projects on the Mt. Taylor Ranger District of the Cibola National Forest focused on airway beacon sites. The partnership between the Forest Service and a corps of dedicated Passport in Time volunteers sparked an interest in aviation history that unexpectedly took a firm hold in the small New Mexico community of Grants. The Cibola County Historical Society has worked diligently for the past 3 years to build on the initial PIT achievements, and continues to do so. The key structure, a federal flight service station, has recently been listed on both the State and National Registers. Other accomplishments include the recording of multiple beacon locations, the rehabilitation of 2 beacon generator sheds, and the creation of an interpretive site at the Grants-Milan Airport where a small part of aviation history lives on.

Brown, Alexander (Researcher- ArchaeoTek Archaeology)

[271] *Heated Competition: The Social Role of Hypocaust in Roman Dacia*

This paper explores the social influence in the employment of one aspect of Roman architectural culture, the hypocaust heating system, in the specific context of Roman Dacia. Hypocaust heating became the prevalent standard for wealthy homes throughout the Empire, but due to the expense was more commonly employed in a limited fashion, especially in Dacia. As a luxury accommodation, the hypocaust provides a potential proxy for wealth and status of the resident user. As a luxury that is felt, and not directly seen, this also becomes a proxy for interpersonal social interaction; as opposed to other architectural embellishments, hypocaust use was dependent on human presence, and size may more strongly indicate used capacity than other types of rooms.

Comparisons of domestic contexts, both rural and urban, in which hypocausts are found or not found in Roman Dacia can thus help delineate the extent of social networks that were operating the various economic and political machineries of the province. Following on preliminary investigations in the Mures Valley Region of Romania, formerly Dacia, the author proposes that the physical ambience created by hypocaust would have influenced the structures of sociopolitical interactions in Roman Dacia.

Browne Ribeiro, Anna (Museu Paraense Emilio Goeldi - CCH) and Helena Pinto Lima

[23] *An Amazonian Crossroads: Results from Pilot Fieldwork on the Xingu-Amazon Confluence, Brazil*

The mouth of the Xingu River was an important Lower Amazonian crossroads in colonial-historic times, as attested to in documentary sources. However, little is known about the rich precolumbian past evinced by extensive terra preta (anthropogenic black earth) and abundant artifact deposits. Here, we present research aimed at understanding the longue durée of the spatial articulation of cultural and natural systems.

Sited at the entrance to the Xingu River, Carrazedo was a prominent colonial-historic town, which sits atop a 60+ hectare precolumbian terra preta site. Results from archaeological fieldwork at Carrazedo show that precolumbian sites occur in higher frequency distributions than colonial sites, and occupied major riverine crossroads as well as inland areas. Hence, though the spatial distributions of settlements overlap, precolumbian habitation patterns exploited a wider range of ecological localities and left a more significant imprint on the landscape than did colonial-historical settlements.

This research, pilot work for the region's first archaeological project, shows the understudied Xingu-Amazon confluence is promising for studying human-environment dynamics. Additionally, sites like Carrazedo suggest that this crossroads was equally important to pre-colonial exchange networks as to the early globalizing (1650–1900) world, and that its early-modern relevance may derive from its precolumbian status.

Bruck, Joanna (University of Bristol)

[116] *The Power of Relics: Curating Human Bone in the British Bronze Age*

This paper will investigate evidence for the curation of 'relics' (pieces of human bone that were deliberately retained over long periods of time) in the British Bronze Age. Isolated fragments of human bone have frequently been identified in settlement contexts, for example, pits and ditches; they have also been

found in graves alongside the complete bodies of other individuals. It is widely recognised that Bronze Age artefacts such as jet beads and ceramic vessels were kept and circulated as heirlooms over many generations. This project will consider evidence to suggest that human remains may have been treated in similar ways, including fragments of bone shown by radiocarbon dating to be earlier than their final depositional contexts, as well as worked bone that has been transformed into items of material culture. The possible social implications of these practices will be explored, casting light on how memory, materiality, and the body were drawn into the definition of social and political identities.

Bruno, Maria (Dickinson College), Katherine Moore (University of Pennsylvania), José Capriles (Universidad de Tarapacá), Andrew Roddick (McMaster University) and Melanie Miller (University of California, Berkeley)

[122] *Man'asiñani: Political Dimensions of Foodways on the Taraco Peninsula, Bolivia during the Formative and Tiwanaku Periods*

Multi-year excavations at four sites on the Taraco Peninsula, Bolivia have produced rich plant, faunal, ceramic, and isotopic data that shed light on early foodways in the Lake Titicaca Basin of the Andes. In this paper, we explore the roles food played for the various political entities that emerged and subsided throughout the Formative (1500 B.C.–A.D. 400) and Tiwanaku (A.D. 400–1100) periods. From the small, autonomous village polities of the earlier Formative periods to larger, political centers under the sway of the Tiwanaku state: How was food prepared and served in public spaces and how did it articulate or diverge from daily foodways? How did certain elements such as ingredients, preparation, and presentation vary across these periods and influence the way political structures motivated local participation and interactions?

Brunson, Katherine (Harvard Fairbank Center for Chinese Studies), Zhipeng Li (Institute of Archaeology, Chinese Academy of Social Sciences) and Rowan Flad (Harvard University Department of Anthropology)

[180] *The Oracle Bone Project: Tracing the Spread and Development of Oracle Bone Divination in Ancient China*

Oracle bones—animal bones used for pyro-osteomantic divination rituals in East Asia—are one of the most important types of bone artifacts in Chinese Neolithic and Bronze Age archaeological sites and the source of inscriptions containing the earliest writing in ancient China. In the Oracle Bone Project, we are creating a database of Chinese oracle bones in order to study the origins of oracle bone divination rituals, their spread across Asia during the Neolithic, the types of animal bones used to make oracle bones, and the ultimate development of oracle bone divination as a central part of Shang Dynasty royal religious practices. We present the results of our first season of data collection and share the open access multi-language database available on Open Context (opencontext.org).

Brush, Nigel [112] see Redmond, Brian

Bruxelles, Laurent [220] see Bonnissent, Dominique

Bryce, Joseph [39] see Lambert, Stephanie

Bryce, Joseph (Brigham Young University) and Spencer Lambert (Brigham Young University)

[113] *Food and Family: Comparing Residential Structures at Two Fremont Sites in Utah Valley*

Excavations conducted by Brigham Young University's Field Schools from 2010–2015 have uncovered several examples of Fremont residential architecture at two sites around Utah Lake. At least five residential structures have been excavated at Wolf Village (42UT273), a site dating to A.D. 900–1208, while one residential pithouse was uncovered at the Hinckley Mounds site (42UT111). Recent research at these sites has focused on architecture and the use of space, particularly in regards to communal architecture. This paper seeks to add to these investigations by comparing the faunal assemblages from the residential structures at both sites and how each was utilizing local lake, marshland, and mountain resources.

Brzezinski, Jeffrey [117] see Joyce, Arthur

Buchanan, Briggs [16] see Hamilton, Marcus

Buchanan, Jozie (Instituto De Estudios Peruanos)

[283] *The Role of Botanicals in the Hierarchy of Panquilma*

In this paper, through botanical analysis, I will reconstruct the environmental consumption patterns in the Lurin Valley during the Late Intermediate Period. To this end, we will compare botanical remains from each of the three sectors of the site. In particular, I will compare the botanical remains from ritual and domestic contexts, to seek ideas related to hierarchy, identity, and power on the role of women.

Buchanan, Meghan (Indiana University)

[285] *Life in a Mississippian Warscape: Violence and Materiality at the Common Field Site*

Analyses and interpretations of Mississippian Period warfare have typically been couched in evolutionary theoretical frameworks that down play, dismiss, or ignore the impacts of endemic violence on the lived experiences of past peoples. Carolyn Nordstrom (1997) advocates the telling of “a different kind of war story,” one that focuses on human experiences, tragedies, and creativity during periods of political and social upheaval and violence. In this presentation, I discuss a framework for studying the intersections of violence and practice in archaeological warscapes enacted in micro-scale actions (histories or genealogies of practices) and macro-scale regional histories. In the thirteenth century A.D., as palisade construction increased throughout the Midwest and violent encounters occurred at numerous sites, the Mississippian Period Common Field site in southeast Missouri was destroyed in a catastrophic conflagration. Drawing on ceramic data from Common Field, I argue that inhabitants of the site engaged in processes of hybridity related to their changing social, environmental and cosmological interactions during this period of escalating violence in the decades prior to the destruction of the site.

Buck, Paul (Nevada State College/Desert Research Institute) and Donald Sabol (Desert Research Institute)

[110] *Sub Pixel Detection of Archaeological Materials using NASA Satellite and Aircraft Data*

For this NASA-funded project, we examine the detectability of sub-pixel artifacts (i.e., site midden, obsidian artifacts, and pottery sherds) using airborne and spaceborne image data. We focus on research conducted to date at Glass Mountain Site in northern California. This large obsidian quarry area has been investigated during winter 2014 and again during the height of vegetation growth 2014. Visible, SWIR, and TIR spectral characteristics of targets and background were measured in the field. A spectral library has been constructed from ~100 target and background samples. The average density of obsidian per m² has been calculated for ~10 8 x 8 m squares. Image data include: NASA's MODIS/ASTER airborne simulator (MASTER) imaging system, the Airborne Visible/Infrared Imaging Spectrometer (AVIRIS), and the advanced Spaceborne Thermal Emission and Reflection Radiometer (ASTER). Our objectives are to: 1) test the detection limits of obsidian artifacts at the sub-pixel scale, 2) examine the influence of background, seasonal vegetation change, and other on-site changes have for the detectability of obsidian, 3) establish the instrumentation, spatial scale, and spectral bands needed to improve the detectability, and 4) test predictions of new locations for obsidian artifacts at specific (spatial) densities in other image scenes and ground truth these predictions.

Buckberry, Jo [103] see Büster, Lindsey

Buckland, Philip [218] see Griffiths, Seren

Buckler, Edward [66] see Swarts, Kelly

Buckley, Michael**[84]** *ZooMS Species Identification and its Compatibility with Other Bioarchaeological Methods*

The interdisciplinary nature of the tools and techniques available to the bioarchaeologist ranges across the sciences. Most recently, the field of proteomics within analytical chemistry has been utilised to develop methods of species identification of archaeological materials in a technique that we have been calling ZooMS, short for Zooarchaeology by Mass Spectrometry. This methodology was initially created for separation of common domesticated vertebrates, but recent years have seen the development of this technique across a wider range of wild animal taxa, as well as improvements in the high-throughput potential of the analyses. Most recently, the compatibility of the ZooMS collagen fingerprinting technique with other bioarchaeological methods has been explored. This paper presents the latest results on the taxonomic resolution of ZooMS collagen fingerprinting, and discussing its advantages and disadvantages over other methods of species identification available to the archaeologist. It then goes on to highlight examples in which the method has been applied to tackle archaeological questions in combination with other techniques, including stable isotope, radiocarbon, and ancient DNA analyses. Practical considerations over this compatibility are discussed.

Buckley, Gina [129] see Hernandez Sarinana, Daniela

Buckley, Gina (The Pennsylvania State University), Rebecca Storey (University of Houston), Kenneth G. Hirth (The Pennsylvania State University), Douglas J. Kennett (The Pennsylvania State University) and Brendan J. Culleton (The Pennsylvania State University)**[129]** *Geographical isotopes, Migration and the Tlajinga District of Teotihuacan*

The Tlajinga district was a possible southern entrance for visitors to the city of Teotihuacan. It was also a locus of craft specialization, especially of San Martin Orange ceramics in the later periods, yet was a cluster of common status neighborhoods. The Tlajinga 33 compound (33:S3W1) was extensively excavated 30 years ago, and recent excavations in two other compounds located along the southern Street of the Dead by the Tlajinga Teotihuacan Archaeological Project (PATT), have added to our knowledge about its residents. Oxygen ($\delta^{18}\text{O}$) isotope analysis in bone and tooth enamel was conducted on some Tlajinga 33 skeletons and revealed that about 30 percent were migrants to the city. Recent analyses of the tooth enamel from newly excavated burials and additional Tlajinga 33 skeletons using oxygen and strontium ($^{87}\text{Sr}/^{86}\text{Sr}$) isotope ratios have provided additional insights into the geographical origins of the residents of the Tlajinga barrio and the reconstruction of changes in residence since childhood. Implications of these new findings are examined in order to further understand the extent of migration into Tlajinga and the impact this had on maintaining its population.

Budar, Lourdes [216] see Venter, Marcie

Budar, Lourdes (Universidad Veracruzana)**[264]** *La Perla del Golfo, puerto prehispánico de Los Tuxtlas.*

Desde fechas muy tempranas en Mesoamérica, existe evidencia de navegación y tecnologías asociadas a ella; la mayor parte de este corpus está constituido por representaciones en estelas, figuras efígie, pictografías, improntas de canoas y algunos artefactos que se cree que fueron utilizados en estas actividades. La mayoría de los estudios y las propuestas se han enfocado en reconocer las tecnologías, las rutas de intercambio y su papel e importancia en el flujo de bienes suntuarios y/o utilitarios, dejando de lado las dinámicas sociales, económicas, políticas y de ejercicio de poder que soportan el desarrollo y la práctica de la navegación. En la zona costera de la Sierra de Santa Marta se ha registrado un conjunto de sitios monumentales que por sus características y disposición espacial constituyen un complejo portuario activo desde el Formativo Medio hasta el Clásico Tardío. En esta ponencia se expondrán algunos resultados preliminares de los trabajos realizados en el sitio portuario de la Perla del Golfo haciendo énfasis no en las posibilidades o evidencias de la navegación, si no en el conjunto de procesos sociales que la circunscriben a partir de la organización espacial, funcional y administrativa de este puerto prehispánico de Los Tuxtlas.

[216] *Discussant***[264]** *Chair***Budd, Tommy (Arizona State University) and Amanda Wissler (Arizona State University)**

[181] *Testing Differential Frailty in a Nubian Sample*

Periosteal lesions are often used as non-specific indicators of overall levels of stress and health in the past. Using medieval London samples, Sharon DeWitte (2014) demonstrated that distinguishing between active and healed periosteal lesions can significantly improve our understanding of stress and differential frailty. She found that healed lesions correlated with higher levels of survivorship when compared to active or no lesions. This study examines whether such a pattern may be observable in highly different populations and samples. We collected data on periosteal lesions, focusing on active versus healed status, from a sample of individuals from the Semna South collection housed at Arizona State University. Excavated from a cemetery near the fort at Semna South in modern Sudan, the remains date to the Meroitic (350 B.C.E. to 350 C.E.), X-Group (350 to 550 C.E.), and Christian (550 to 1400 C.E.) periods. This study tests the repeatability of DeWitte's findings on a dissimilar population. Results of the analysis are presented and compared to those of DeWitte, and implications for future research are discussed.

Bueno, Marilyn [93] see Copeland, Lauren

Bueno, Lucas (Universidade Federal de Santa Catarina) and Andrei Isnardis (Universidade Federal de Minas Gerais)**[139]** *Mobility and Territoriality in the Early Peopling of Central Brazilian Plateau*

The occupation of Central Brazilian Plateau between late Pleistocene and early Holocene seems to have privileged as displacement axes the fluvial valleys of the great perennial rivers that crosscut this region. This proposal is based on the existence of sites with similar characteristics, located at great distances, as the Rio Peruaçu (Minas Gerais state) and the Serra da Capivara (Piauí state), connected to the same hidrographic basin, and presenting same occupation chronologies. Throughout these main axes of displacement, certain places that are marked by resource diversity and specific landscape features had been frequently used, with recurrent occupations since the late Pleistocene and continuously throughout the Holocene. Our proposal emphasizes that such places, that could have been initially selected in function of the available resource diversity in a period of climatic instability, had passed to be conceived in another way, acquiring a different status during the occupation process of Central Plateau. This "change of status" could be related to the changing perception that such places are "places of people," marked with recognizable signs of human agency, mainly represented by rock art. Such process involves different patterns of mobility and territoriality.

Buffalo, Johnathan [266] see Noldner, Lara

Buffalo, Johnathan (Meskwaki Nation, Iowa, USA)**[266]** *Chair*

Buhay, William Mark [220] see Chinique De Armas, Yadira

Buhrow, Kristin (Clemson University) and Melissa Vogel (Clemson University)**[92]** *Gender, Class and Textile Production: An Analysis of Casma Spindle Whorls from El Purgatorio, Peru*

Spindle whorls have historically been subjected to less archaeological attention than other artifact classes. This dearth of analysis may reflect an underestimation of the insights to be gained from spindle whorls, in terms of archaeological interpretations of gender, status, and exchange patterns, which may be much greater than previously acknowledged. The case study presented here examines a sample of spindle whorls from the Casma capital city of El Purgatorio, Peru. We examine their iconographic and functional designs with an eye to understanding these artifacts utilitarian tools, items of personal adornment, symbols of wealth and status, and possibly as indicators of intrapopulation exchange patterns. The results show that many whorls were not only tools and utilitarian in function, but were also intended to be decorative and perhaps indicators of female wealth or status. The sample studied here also reflect varying degrees of standardization, suggesting that perhaps they were manufactured by specialists, and supplying insight into Casma state production practices.

Bukhsianidze, Maia [87] see Coil, Reed

Burchell, Meghan (Memorial University), Natasha Leclerc and David Grant**[185]** *Trace Elements in Archaeological Shells: Limits and Potential for Seasonality and Paleoclimate Studies*

Stable oxygen isotope analysis of marine shells has increasingly become a common tool used to identify seasonality and reconstruct past sea surface temperatures (PSST). Oxygen isotope analysis of marine carbonates cannot, however, discriminate between freshwater fluxes and temperature changes as they both affect oxygen isotope ratios ($^{18}\text{O}/^{16}\text{O}$). The inability to discriminate the geochemical data can lead to ambiguous PSST and seasonality interpretations. Trace element ratios of Sr/Ca are affected in marine organisms by salinity and freshwater, whereas Mg/Ca ratios are specifically affected by temperature. Trace element ratios can potentially be used to isolate freshwater and temperature changes, and provide more reliable PSST estimates for sites located in estuarine settings or in areas with high seasonal freshwater discharge. For this project, we used live-collected shells to examine geochemical properties of *Saxidomus gigantea* (butter clam), one of the most commonly recovered bivalves from shell middens on the Pacific Northwest Coast to test the limits and potential of trace element analysis to resolve archaeological questions of seasonality and past sea surface temperatures.

Burga Gil, Fiorella (Fiorella M. Burga)**[254]** *Cambiando visiones. La Puesta en Valor como medio de Conservación de un sitio arqueológico. El caso de Cerro Azul*

¿Es posible implementar una puesta en valor sin necesidad de realizar grandes intervenciones arquitectónicas y remociones de material? Esta ponencia busca mostrar un plan de puesta en valor, que basado en el uso del sitio como espacio público sea a futuro el soporte de actividades de desarrollo social sostenible y participativo.

"El Huarco" (Cañete, Perú), sitio Inca con arquitectura monumental, cuenta con un incalculable valor histórico y turístico, indudablemente representa un eje potencial de desarrollo social, no solo a nivel regional sino nacional. Su puesta en valor, se logrará mediante el engranaje de diversos factores: el aprovechamiento de circuitos pre-existentes, el uso del turismo recreacional y educativo; y el apoyo de los actores locales.

Sin embargo, los diagnósticos realizados muestran un sitio amenazado por diversos agentes: naturales y antrópicos, afectando severamente sus estructuras. Aunque estos limitan su puesta en valor, creemos que una propuesta de puesta en valor integral dentro de los esquemas participativos, comunales y sostenibles que caracteriza el proyecto Qhapaq Ñan Peruano, convertirán al sitio en vehículo del desarrollo social, sin incurrir en onerosos gastos, enfocándonos en el uso del sitio como espacio público, recuperando sus significados locales y resaltar sus potencialidades sociales.

Burger, Richard (Yale University)

[31] *Revisiting the Chronology of Chavin de Huantar*

Chavin de Huantar continues to play a central role in our understanding of the Central Andes during the Initial Period and Early Horizon and thus an understanding of its chronological position remains crucial. This talk will present a critique of the contribution of recent work at Chavin to this theme, including a consideration of both ceramic and radiocarbon sequences. A new set of radiocarbon measurements based on the analysis of animal bone from the residential sector will be presented and used to evaluate conflicting interpretations regarding the history of the site.

Burger, Richard [57] see Salazar, Lucy

Burgos, Walter [212] see Barrios, Edy

Burgos, Walter [212] see McNeil, Cameron

Burham, Melissa (University of Arizona) and Danielle Phelps (University of Arizona)

[236] *Defining the Spatial to Find the Social: Applying Generative Planning Theory and GIS to Distinguish Communities at Ceibal, Guatemala*

While residential zones in many Mesoamerican cities were perceptibly defined by physical boundaries, the spatial division of Maya urban centers is not very clear. Following empirical urban theories outlined by Michael Smith (2010; 2011), we employ generative planning theory as a framework for defining residential zones in the peripheries of Ceibal, Guatemala. We believe that physical zones likewise represent social boundaries, in this case, local communities that comprised the larger Ceibal polity. Like many lowland Maya sites, Ceibal grew into an urbanized center in the Late Preclassic (ca. 350 B.C.–100 B.C.). During this time, numerous minor temples were constructed in peripheral areas, and clusters of residential structures were built contemporaneously around them. Ritual was clearly an important consideration for outlying populations during Ceibal's urban expansion. We suggest these temples were the physical and ideological epicenters of local communities, which were fostered through monumental construction and subsequent ritual practices. While some houses are clearly associated with the temples, the physical limits of the communities are uncertain. To supplement the analysis, we employ GIS to identify related architectural groups. This case study more broadly explores the potential of generative planning theory for understanding the spatial and social organization of ancient Maya cities.

Burke, Chrissina [65] see Nowakowski, Joshua

Burke, Chrissina (Northern Arizona University) and Joshua Nowakowski (Northern Arizona University)

[65] *Dog Burials and Healed Cranial Lesions: Exploring the Human-Dog Bond in the American Southwest*

Since the initial domestication of the dog, humans and their canid companions have maintained a close connection. Dogs have been employed as hunters, beasts of burden, mousers, refuse disposers, ritual guardians, and for emotional support. Also, given their physical size and profile, dogs have often been considered an animal underfoot. Despite dogs' myriad working conditions, zooarchaeological research illustrates a non-random pattern of cranial lesions to prehistoric domesticated dogs from many sites around the world. In consideration of this, the authors studied over 50 dog burials from the Museum of Northern Arizona's curated faunal collection. Skeletal material from the dog burials were examined for age, sex, size, burial orientation, mortuary context, and skeletal pathologies. In this poster, we address the results from these examinations with specific focus on the cranial lesions and explore the possibility that the human-dog relationship led to these injuries.

Burke, Ariane (Université de Montréal), Masa Kageyama (Laboratoire des Sciences du Climat et de l'Environ), Guillaume Latombe (Monash University), Mathieu Vrac (Laboratoire des Sciences du Climat et de l'Environ) and Patrick James (Université de Montréal)

[211] *Risky Business: The Impact of Climate Variability on Human Populations in Western Europe during the Last Glacial Maximum*

The extent to which climate change has affected the course of human evolution is an enduring question. The ability to maintain spatially extensive social networks and fluid social structure allow human foragers to "map onto" the landscape, mitigating the impact of resource fluctuation. Together, these adaptations confer resilience in the face of climate change—but what are the limits of this resilience and what is the role played by climate variability? We address this question by testing how climate conditions and climate variability, which we consider a proxy for environmental risk, affected the distribution of human populations living in western Europe during the Last Glacial Maximum. The mechanisms used by foragers to counter resource failure come at a cost and the ability to make accurate predictions about the availability of resources helps foragers avoid costly mistakes. Climate variability, therefore, is a potentially significant risk factor since it affects the distribution of plant and animal resources unpredictably. Here, we quantify the sensitivity of human systems to this potential risk factor at a variety of spatial and temporal scales.

Burkholder, Jo (University of Wisconsin - Whitewater)

[206] *Investigating Rock Art in the Coastal Valleys of Arequipa*

Rock art takes on a diversity of forms in the coastal valleys of Arequipa ranging from pictographs and petroglyphs to larger geoglyphs and rock alignments. This poster documents initial steps being taken to document and understand the contributions of all forms of rock art to the sacred geography and cultural landscape of this region before, during, and after the Middle Horizon Period (400–1000 A.D.) Techniques being used include photo documentation, mapping, and viewshed/intervisibility analyses.

Burks, Jarrod (Ohio Valley Archaeology, Inc.)**[34]** *Variability in Large-Area Magnetic Surveys at Hopewell Earthworks and the Challenges of Big Data*

Many Ohio Hopewell earthworks present an interesting challenge to archaeological geophysics: they are very large and contain vast amounts of what seems to be empty space. Both have limited our understanding of the breadth of the archaeological record at these complex sites; that is, until very recently. Large-area surveys at three Hopewell earthwork complexes in Ross County, Ohio (Hopewell Mound Group, High Bank Works, and Hopeton Works, ca. 30 ha each), have uncovered a wealth of new features, from large pits and lightning strikes to wood henges and new earthen enclosures. In this presentation I explore the range of new finds and some of the challenges, and solutions, to working with large amounts of geophysical data. The results of today's geophysical surveys will be the stuff of research designs for decades to come.

[34] *Chair***Burnett, Paul (SWCA Environmental Consultants), Erik Otarola-Castillo (Purdue University) and Lawrence Todd (Park County Historic Preservation Commission)****[115]** *Improving Discovery-Based Probability Models for the Shoshone National Forest, Wyoming*

Site prediction models continue to contribute useful information to the management of archaeological resources. For example, since 2009, we have developed several probability models for the Shoshone National Forest. The first model was used to guide inventory of areas burned in wildland fires to rapidly appraise archaeologically sensitive areas. The model was overhauled in 2015 to cover the entire Shoshone National Forest. Until now, we have used stepwise logistic regression to identify environmental parameters significantly contributing to site presence/absence. This approach has been successful. However, opportunities for model improvement remain. First, the stepwise regression procedure can be affected by the happenstance of a particular random sample. In addition, estimates of model parameters can be heavily biased due to sample area coverage and its resulting spatial autocorrelation. We improve on this process by employing new statistical techniques guarding against pseudoreplication of variables by modeling and accounting for the observed autocorrelation in the site/nonsite sample. Secondly, rather than relying on stepwise selection of a variety of environmental parameters for inclusion in the model, we employ environmental parameters that we interpret as conditioning site presence/absence. We use the Akaike Information Criterion to identify the best model.

Burnett, Katherine (Fort Irwin), Armando Abeyta (Fort Irwin), Jessica Mauck (Fort Irwin) and Amber Fankhauser (Fort Irwin)**[245]** *An Overview of the Distribution of Clovis/Great Basin Concave Base Projectile Point Sites at Fort Irwin, San Bernardino County, California*

Fort Irwin is a United States Army installation located approximately 37 miles northeast of Barstow, California, in the central Mojave Desert. Totalling 1,193 square miles in size, this installation has a wide variety of archaeological resources including at least four sites with recorded Clovis/Great Basin Concave Base projectile points and several isolated finds identified as Clovis points. The goal of this study, conducted by Redhorse Corporation on behalf of the Fort Irwin Cultural Resources Program, is to integrate data on these projectile points from a variety of legacy collections, academic publications, and cultural resources management reports with new data from Fort Irwin's archaeological collections into a GIS layer. In this paper, we will provide an overview of the distribution of Paleoindian points within various landscapes at Fort Irwin, particularly focusing on resource exploitation. Compiling this data into a GIS layer that can be used to investigate a variety of research questions is the first step in Redhorse's plan to build a geodatabase that features a layer on each of the Mojave Desert chronological periods represented at Fort Irwin with the ultimate goal of providing a tool that can be useful to researchers and land managers.

Burns, Jonathan [176] see Welker, Martin

Burroni, Daniela [214] see Donahue, Randolph

Burt, Chadwick K. [18] see Walker, William

Burt, Amanda [123] see Scheiber, Laura

Burt, Amanda (Indiana University), Alex Badillo (Indiana University), Lindsey Kitchell (Indiana University) and Gary Motz (Indiana University)**[176]** *Identifying Canid Tooth Modification: A Side-by-side Comparison of 3D Imaging Techniques*

In this paper, we evaluate the efficacy of two methods, namely photogrammetry and 3-D laser scanning, for the purpose of identifying cultural modification of bone, specifically canid teeth. Instances of dogs with altered canine and carnassial teeth have been observed in Plains Native American archaeological assemblages as well as in the ethnographic record of the Late Prehistoric era. The identification of this type of cultural modification will help interpret ways in which animal and human interactions have changed through the past. We use a comparison of two prevailing imaging techniques to compare how accurate they are for measuring degrees of destruction of canid teeth in order to identify evidence of cultural modification. We aim to demonstrate that this particular type of modification has a unique morphological signature that can fit within a likelihood model in order to determine a quantified basis for the evaluation of the presence of cultural modification. This methodology will lay the groundwork for examining other assemblages in hopes of detecting modification of canid teeth that have not previously been identified as such. Canid remains from two sites in Wyoming are used as examples of culturally modified dentition in dogs.

Bush, Dominic and Mark Schurr (University of Notre Dame)**[112]** *Using Stable Isotope Analysis to Demonstrate Humans' Role in Faunal Diet Construction at the Collier Lodge Site (12PR36)*

Previous research on the faunal assemblage recovered from the Collier Lodge site (12PR36) centered on the presence and absence of taxa to reconstruct a possible diet breadth for inhabitants of this historic Indiana site. However, the focus of this year's research is the inferences drawn from stable isotope analysis of said assemblage; specifically, the ratio of ^{12}C to ^{13}C and ^{15}N to ^{14}N . The former provides insights into the source of carbon obtained through diet, while the latter gives clues to an organism trophic level based on the transfer of nitrogen. This kind of analysis is used to create a food web for the fauna, both domestic and wild, that inhabited 12PR36. The $\delta^{13}\text{C}$ and $\delta^{15}\text{N}$, where δ represents the ratio of the previously mentioned isotopes compared to a standard, will be used to determine the role of humans in the diets of the fauna analyzed. Ultimately, it will be shown to what effect animals were relying on human scraps and agriculture for dietary purposes.

Büster, Lindsey (University of Bradford, UK), Ian Armit (University of Bradford), Laura Castells Navarro (University of Bradford), Jo Buckberry (University of Bradford) and Rick Schulting (University of Oxford)

[103] *A later Prehistoric Mortuary Complex on the Moray Firth: The Covesea Caves, NE Scotland*

The Sculptor's Cave in NE Scotland is known for its Late Bronze Age and Roman Iron Age human remains, which were unearthed during excavations in 1928–30 and 1979: the former suggest the curation and display of (possibly fleshed and adorned) juvenile heads, while the latter indicate the practice of decapitation of (predominantly adult) individuals inside the cave. These remains are being analysed as part of a project at the University of Bradford to reanalyse and publish the excavation archive. In addition, recent fieldwork at an adjacent cave (Covesea Cave 2) is beginning to reveal similar evidence to that from within the Sculptor's Cave, suggesting that the latter was not unique but part of a larger mortuary landscape along this stretch of the Moray coastline. This paper will examine preliminary findings from the Covesea Cave assemblage, with evidence for excarnation, trauma, selective redeposition, and processing of certain skeletal elements, in what could be considered a 'chaîne opératoire' of later prehistoric mortuary practice, and will compare this from what is already known from the Sculptor's Cave and elsewhere in Britain and Europe.

Butler, Virginia L. [35] see Catto, Lisa

Buvit, Ian

[150] *The Middle Upper Paleolithic of the Transbaikai, Russia: Ice Age Humans in Southern Siberia*

The Last Glacial Maximum (LGM, 26-20 kya) was a time of reduced global temperatures. Southern Siberia, where decades of Paleolithic research have demonstrated a keen link between environment and middle Upper Paleolithic hunter-gatherer behavior, offers a unique testing ground to examine various ecologically sound models about whether human populations declined or disappeared during the height of the last ice age. Other unanswered questions have to do with the origin and dispersal of microliths in the area. Here, we discuss evidence for and against LGM occupation of the Transbaikai Region with an emphasis on radiocarbon dating and technology. Included is an introduction to Lagernaya, an apparently pre-LGM site where excavations are going on to address questions about the topic.

[120] *Chair*

Buvit, Ian [120] see Chenvert, ErinMarie

Buzon, Michele R [24] see Whitmore, Katie M

Byambaa, Gunchinsuren [180] see Ciolek-Torello, Richard

Byers, David (Utah State University) and Suzann Henrikson (Bureau of Land Management, Burley, Idaho Field Off)

[113] *Bison, Cold Storage and Holocene Climate Change on the Snake River Plain*

Over the past several years, efforts to expand our knowledge of the Holocene climate of southern Idaho have been initiated through analyses of the relationships between bison remains recovered from seven cold lava tubes on the eastern Snake River Plain and several paleoenvironmental indicators. Although the mere existence of these unique storage features would suggest that they would always be utilized, we suggest the key variables associated with such use would revolve around fluctuations in temperature and precipitation that resulted in variation in bison encounter rates. Preliminary data indicate that such climatic shifts were of significant magnitude to have negatively influenced the availability of bison during hotter, drier periods. We argue that this patterned motivated the storage of bison products in lava tubes containing year-round ice as a risk-mitigation strategy designed to reduce the variance in the availability of important nutrients during times of environmentally-induced resource stress.

Byrd, Julia (Florida Bureau of Archaeological Research)

[290] *The Original Spaghetti Junction: Using Canoe Locations to Trace Routes of an Ancient Transportation Network in Florida*

This paper presents results of spatial analysis on Florida's 400 dugout canoes recorded in the Florida Bureau of Archaeological Research's canoe database. Patterned concentrations of canoes located at the edges of basins suggest that prehistoric people had a system of drop-off points, where canoes were left for later use. Such a system is consistent with ethnographically recorded canoe-use practices among indigenous peoples in Florida and beyond. Drop-off points represent important places on the riverine landscape, marking the interchanges that connected communities from neighboring regions. This model of specific canoe routes is testable and has the potential to be used as a guide to find and protect ancient canoes.

Byszewski, Berenika [226] see Spears, Michael

Cabana, Graciela [111] see West, Frankie

Cabaniss, Andrew (University of Michigan) and Kristen Mann (University of Sydney)

[189] *A Bayesian Framework for Combining Architectural Constraints and Artifact Assemblages in Domestic Spaces*

Twentieth century excavations contributed greatly to our knowledge of domestic contexts throughout the Aegean. These excavations occupy a broad spectrum in terms of sampling strategy, data collection quality, and publication extent. Architectural studies of household behavior have received particular attention, and explorations of settlement social organization through household archaeology are ongoing. Yet few methodologies explicitly address this issue of diverse publication levels and variation in data quality or excavation methodology.

To address this gap, we construct a Bayesian framework for systematically integrating artifact data with constraints that the built environment can impose on household activities. By unifying probabilistic constraints with the creation of probability distributions, we can assess the deviation of the artifact distribution from possible use contexts so as to estimate a minimum bound on the effect of depositional and taphonomic processes in creating the

observed material record. The resulting probability distributions of activities in space can be compared across houses using non-parametric measures to investigate spatial specialization and organizational variation between houses.

We use this technique to compare houses between three sites in the Aegean at different stages of urbanization in order to elucidate changes between the domestic and civic spheres during the Archaic period (800–500 B.C.E.).

Cadena Guativa, Angel Adolfo (A. Cadena)

[14] *Acercamiento a las Opciones Técnicas en la Elaboración de Cerámicas Tempranas del Caribe Colombiano: Estudio Tecnológico de los Sitios Puerto Hormiga y Monsú*

Las cerámicas tempranas del Caribe Colombiano (5000 a 1000 a.C.), las más antiguas del continente, son importantes en la formulación de hipótesis sobre origen y producción de alimentos en América. Esta investigación plantea un estudio tecnológico de cerámicas de Puerto Hormiga y Monsú desarrollando tres actividades. Primero, se determinaron las propiedades físicas y mineralógicas mediante técnicas de laboratorio (RX, petrografía, SEM, y DRX). Segundo, se comprobaron hipótesis sobre su función. Tercero, se identificaron de manera inicial algunos de los componentes de la cadena operativa.

Cain, Tiffany [54] see Diserens, Kasey

Cain, Tiffany (University of Pennsylvania)

[221] *Intersubjectivity and a Theory of Actively Engaged Heritage Practice*

Engaged heritage practice locates its core around the reflexivity of its practitioners and the dialogic nature of its projects. Indeed, the relevance of heritage work is arguably inextricable from its capacity to recognize the needs and interests of both researchers and community members, however defined. Those needs and interests can be better addressed if we look more critically at the subjectivities of participants and non-participants in our projects, ourselves included. This paper proposes that an action-oriented exploration of intersubjectivity may bolster theoretical works surrounding cultural heritage practice. In doing so, I turn particular attention to the wanting discussion surrounding gender in stakeholder-focused archaeological heritage work. I suggest that one of the reasons gender in heritage practice is understudied is that practitioners have, for important social and political reasons, had to contend with the role and impact of other subjectivities like race and class first. Drawing on field experience in Quintana Roo, Mexico, I consider the gendered dimensions of fieldwork and the limitations of particular methodologies and interpretative frameworks, particularly the highly masculinist representations of historical violence and tendency toward discussions of economic sustainability as the prominent value of community-based participatory research projects.

[221] *Chair*

Cajigas, Rachel (University of Arizona)

[120] *Magnetic Gradiometry in the Spatial Reconstruction of the Early Agricultural Period Canal System at La Playa, Mexico*

La Playa (SON F:10:3), in Sonora, Mexico, is an Early Agricultural Period (2100 B.C.–A.D. 50) archaeological site which has the remains of an irrigation canal system. The Early Agricultural Period is characterized by the development of agriculture in the southwestern United States and northwestern Mexico. Due to severe erosion at La Playa, intact canals and cultivated soils had not been located for study. Magnetic gradiometry was used to detect intact agricultural features buried by alluvium. This paper presents recent magnetic data from La Playa. Intact irrigation canals, water retention features, reservoirs, and possible cultivation plots were successfully identified using this method. This data set has significantly contributed to the understanding of land management strategies by imaging the extent and morphology of the canal network and relationship to other agricultural features. Data from this survey will guide future sampling strategy and archaeological testing. This technique has changed future excavation strategies from those which focus primarily on salvage archaeology, to strategies which can incorporate the testing of specific archaeological features before they are destroyed by erosion.

Calaon, Diego (Marie Curie Fellow, Stanford, US - Ca' Foscari Venezia, I)

[161] *"L'Isola che non c'è". Narratives about 8th Century Venice / Malamocco*

Venice in the eighth century was a key trade centre in the Mediterranean. Between 742 and 812 A.D. the centre of Venice was not located where it is today. The Duke's palace and his headquarters were in Malamocco Island. Malamocco is a never-never land ("Isola che non c'è"): its location on the lagoons has never been positioned accurately, and traditional archaeology methods have failed in the description of the materiality of the site. How can modern archaeology fill this gap and project a holistic research around a pivotal site of the medieval Europe? GIS analyses allow identifying the location of the settlement. Comparisons with other lagoon sites permit a tentative material reconstruction. A comprehensive environmental approach will help to define the sustainability of the site and the reasons of its abandonment. Modelling activities will encourage the reconstructions of the settled areas, and ideas about the social structure of the first Venetian communities. An anthropological and sociological reassessment of the political narratives will shed light on the interpretation of old archaeological excavated material. Finally, the analysis of the perception of the first Venice among the nowadays Venetians, will advise us on how to tell the story of the Malamocco never-never land.

Cali, Plácido [70] see Sallum, Marianne

Callaghan, Michael [27] see Kovacevich, Brigitte

Callaghan, Michael (University of Central Florida)

[109] *Discussant*

Calleja, Maryann and Debra Martin

[143] *Using GIS to Analyze the Mortuary Context and Taphonomy of the Bronze Age Commingled Tomb at Tell Abraq*

The archaeological site of Tell Abraq (UAE) has been the subject of multiple studies since its original excavation by Dan Potts. For five seasons between

1989 and 1998 a team of archaeologist excavated the Bronze Age site. The analysis of mortuary context and taphonomy can provide invaluable insights into past biological and cultural conditions. The use of Geographic Information Systems (GIS) can facilitate bioarchaeologists in the further investigation of mortuary placement of human remains and taphonomic processes. The excavation of the tomb—by Debra Martin from 1993 to 1998—containing the commingled remains of more than 400 adults and children, predated the widespread use of commercial GPS technology. This study revitalizes old data by transforming handwritten documentation into a digital format more compatible with GIS software. This modification enables us to perform modeling of the tomb and detailed spatial analyses. Through the use of GIS modeling we are able to gain a clearer picture of the tomb, thus enhancing our ability to discover patterns in taphonomy or mortuary practices at Tell Abraç.

[143] Chair

Camacho-Trejo, Claudia

[294] *Cinacalco: Origin and Kingship in Mexica Cosmology*

In prehispanic times, caves signified the place of origin, the underworld, or where Tlacamecayotl kingship was claimed. Cinacalco, a cave located on Chapoltepēc Mountain, was first recorded in the sixteenth century Historia Toltec-Chichimeca (1550–1560) as being appropriated during 1156 or 1168 after the fall of Tollan. Toltec legend tells that the last king of Tollan, Huemac (Big Hand), committed suicide at the cave after failing to receive help from the gods. At the approach of the Spanish, Moctezuma Xocoyotzin was supposed to have tried to join Huemac in the cave but was denied access by the latter. The Mexicas may have used Cinacalco to associate themselves with the Toltecs. The relation between Mexicas and Cinacalco started with Moctezuma I, when the first portraits of the Mexica tlatoani was carved at the foot of the mountain. This is described by Diego Duran in his Historia de las Indias de Nueva España y Islas de Tierra Firme (1581). This paper reports on the cave and its importance to Mexica cosmology.

Camens, Aaron [223] see Clarke, Geoff

Cameron, Catherine [53] see Lekson, Stephen

Campan, Patricia [207] see Belardi, Juan

Campbell, Wade (Harvard)

[66] *A Petrographic Analysis of Jemez Black-on-white Pottery from Five Classic Period Sites in the Jemez Province, New Mexico (c. 1350–1700 A.D.)*

Unlike many other ceramic types in the American southwest, Jemez Black-on-white is commonly regarded as a distinctive locally-made type that remained both stylistically and compositionally unchanged for three centuries. This generally accepted status of Jemez Black-on-white, however, has meant that until recently, little additional work has been done to better understand its origins and development. Here, I present the results of a petrographic analysis of 15 Jemez Black-on-white sherds taken from five separate Classic Period (c. 1350–1700 A.D.) Puebloan sites in the greater Jemez Valley, New Mexico. This work aims to expand the existing knowledge of Jemez Black-on-white ceramic production practices and provide a basis for future arguments concerning the non-centralized local production of Jemez Black-on-white versus a higher degree of subregional organization/control of ceramic production in the Jemez region.

Campbell, Janice, Jennifer Wildt (Prentice Thomas & Associates, Inc.) and Prentice Thomas (Prentice Thomas & Associates, Inc.)

[164] *Strategic Factors in Middle and Late Woodland Settlement Patterns on East Peninsula, Tyndall Air Force Base, Bay County, Florida*

Data derived from archaeological investigations at Tyndall Air Force Base in northwestern Florida suggest strategic decision-making in settlement patterns during the Middle and Late Woodland periods. The installation occupies prime property on a northwest/southeast-trending peninsula that extends for 18 miles along the Gulf of Mexico and is between two and three miles wide. This small coastal stretch with minimal relief was the scene of increasingly intensive settlement beginning with the construction of burial mounds and villages by Middle Woodland Swift Creek people. In the Late Woodland period, Weeden Island occupants established larger mounds and villages in close proximity to the earlier settlements. Based on radiocarbon dates and assemblage traits, researchers believe the Weeden Island sites reflect a settlement shift by the same population. This paper examines evidence suggesting the large population centers were deliberately established at strategic locations offering both coastal prominence and vantage points for any group approaching the peninsula by water.

Campbell, John (Memorial University of Newfoundland)

[190] *Kaskisebook Tett L'nuk—People on the Edge of the Riverbank: New Perspectives of the Transitional Archaic from the Annapolis River, Nova Scotia*

Recent excavations at the Boswell Site (BfDf-08) in southwestern Nova Scotia have yielded a unique assemblage of Transitional Archaic artifacts. Dating to 3,630 ± 30 B.P., the Boswell Site provides important insights into population movements during this period in Maine and the Maritime Peninsula. Previous archaeological investigations have led to debate concerning the relative importance of cultural diffusion and migration in the southern origins of broadpoint technology. By comparing artifacts from the Boswell Site to collections in Maine, New Brunswick, and Nova Scotia, while considering the use-life of lithic technology through the framework of landscape ethnoecology, an integration of lithic analysis, site location, and traditional knowledge is proposed. In addition, this research explores the migratory movements of Transitional Archaic peoples throughout Maine and the Maritime Peninsula, not only within the currently accepted geographic framework, but also including a northern extension that has not been previously considered.

Campbell, Roselyn (University of California, Los Angeles)

[215] *Smiting Pharaohs: Violence and Power in Ancient Egypt*

Violence against the physical bodies of both the living and the dead provides a powerful way to create and reinforce power dynamics, modify and maintain social roles, and to structure identity groups. The human body has been used as a canvas for violent messages both in modern communities and in past societies. Throughout the long history of ancient Egypt, violence against foreigners and prisoners of war was regularly depicted in art that was intended to demonstrate the king's dominance over enemies and forces of evil. Many have assumed that such depictions of state-sanctioned violence were purely symbolic, but there is evidence to suggest that ritualized killing did take place in ancient Egypt for a variety of reasons. This evidence spans much of

Egyptian history, from the hundreds of subsidiary, apparently sacrificial, burials accompanying the tombs of the earliest Egyptian kings, to the bound body buried at a temple in southern Egypt a millennia later. Violence seems to have been a valid method of communicating power relationships both between Egyptians and outsiders, and within Egyptian society itself. This paper will examine how the ancient Egyptians used violence to negotiate and reinforce social relationships through the medium of the human body.

Campbell, Jennifer (SUNY Potsdam)

[221] *Gendered Heritage: Interspaces and Intersubjectivity*

Ideally, the intersubjectivity of heritage work creates space for the interaction of multiple gendered viewpoints maintaining a collective tension where heritage work flourishes in consideration of multiple lens, multiple meanings, and multiple gendered interpretations. The reality, however, is much further from the rhetoric. In medieval South Asia gender performance was a habituated component of the collective and individual social project. It remains so today. In this paper, I work to consider the production of heritage, the engagements and motivations of heritage stakeholders, and to focus specifically on the life histories that develop around heritage places. Heritage sites are not static or rigid constructs—they are fluid and dynamic. How we study such dynamism is fundamentally shaped by our epistemological project and our own subjectivities. Heritage work deals with powerful past-negotiation and is an active site for the enactment of gendered identities and the projection of present gendered perceptions onto the past. Looking to medieval trade and transit systems and their maintenance today as heritage sites, I attempt to recast this work in consideration of gender; examining how the social construction of gendered practice shapes the heritage project(s) I engage in and forms space within my research for gendered analyses.

Campbell, Rod (Institute for the Study of the Ancient World, NYU)

[256] *Discussant*

Campetti, Casey (AECOM/Indiana University of Pennsylvania)

[197] *High and Dry: A Look at the Relict Nipissing Shoreline of Isle Royale National Park, Michigan*

Isle Royale, located in northern Lake Superior, is a freshwater archipelago and home to Isle Royale National Park (ISRO). Though the antiquity of Isle Royale's prehistory is well-established, identification and excavation of sites has historically been difficult due to the remoteness of the island and its rough terrain. Over the past several years, these efforts have been greatly enhanced by the use of GIS predictive modeling, which has allowed ISRO archaeologists to target surveys and manage archaeological sites more effectively. Though existing models have been in part based on geological research and environmental conditions, they have largely been 'intuitive' models. There are further opportunities to refine the existing models to benefit management and to expand their use as substantial research tools by creating more formal system and applying these models to questions beyond predicting site presence/absence. Following the most recent season of fieldwork along Isle Royale's relict Nipissing shore, work has begun to make comparisons between differences in shoreline use during the Archaic and Woodland periods. This paper presents some of these new directions in thinking about Isle Royale throughout the Archaic/Woodland transition and its larger role in Great Lakes archaeology.

Campos, Cinthia [93] see Orozco, Joseph

Cannarozzi, Nicole [7] see Rock, Carolyn

Cannarozzi, Nicole [28] see Quitmyer, Irvy

Cannon, Mike (SWCA Environmental Consultants) and Lisa Krussow (SWCA Environmental Consultants)

[104] *Relationships among Foraging Efficiency, Agricultural Investment, and Human Health in Fremont Societies*

Marked variability in subsistence strategies has been noted throughout the Fremont archaeological culture. Previously, we have explored such variability by using data on baseline environmental productivity, zooarchaeological evidence for resource depression, and archaeological measures of the importance of agriculture to test the hypothesis that agricultural investment among the Fremont varied inversely with local environmental productivity. Data from throughout the Fremont region are consistent with this general hypothesis in one way or another, though intra-regional variability is indicated in the specific factors that led individuals to allocate time to farming. Data from the Uintah Basin appear to be consistent with the hypothesis that agriculture was a response to resource depression, whereas in the eastern Great Basin, it appears that agriculture was, in part, a response to some factor associated with greater available moisture, possibly higher agricultural yields. Such intra-regional differences in economic contexts may have had important implications for human health, and we explore these here by examining osteological evidence of malnutrition. Specifically, we present an initial test of the hypothesis that human health was poorer in parts of the Fremont region where wild resource foraging efficiency was lower and where agriculture was primarily a response to that lower foraging efficiency.

Cannon, Kenneth (USU Archeological Services, Utah State University), Shaun Nelson (Utah Army National Guard), John Crane (Utah Army National Guard and Utah State University) and James Long (Utah State University Quinney College of Natural R)

[208] *Managing, Protecting, and Interpreting Utah Army National Guard Cultural Resources*

Since 2011, USU Archeological Services has assisted the Utah Army National Guard in the management and interpretation of its varied cultural resources. The work was conducted through a Cooperative Agreement between the UTARNG and Utah State University Quinney College of Natural Resources. Initially, USU Archeological Services worked with the UTARNG on data recovery in advance of firing range construction; however, the presence of unexploded ordnance required great changes in project scope with limited time. The flexibility of the cooperative agreement allowed for a rather simple change in the project parameters without costly delays and expense. Over the past five years, projects included evaluative testing at a possible Fremont-era site at the Salt Lake City Readiness Center, site reassessments at Camp Williams, historic structure documentation at various installations, geophysical surveys at a Puebloan II-III site, development of interpretive displays, historic canal history, documentation of rock art, curation preparation, and the development of a precontact context for Camp Williams. This partnership has also provided an opportunity for training and employing USU archaeology students, an important mission of USUAS.

Cantley, Garry [64] see Slaughter, Mark

Cantrill, Rick (University of Nottingham)**[176]** *Pest, Prey or Domesticated: Odocoileus virginianus in the Maya World*

In 1982, Pohl and Feldman questioned whether the ancient Maya had been in the process of domesticating white-tail deer. The possibility that the Maya actively managed deer populations in proximity to human settlements deserves detailed consideration. Although white-tail deer remains are abundant in zooarchaeological assemblages, comprehensive size and demographic studies have not yet been undertaken to help establish which motives might inspired efforts toward herd management. A lack of metrical analysis presents a significant hurdle to establish sex profiles for pre-historic deer populations. This presentation will describe the methods of a new osteometric study of modern and ancient white-tail deer from North and Central America. It will demonstrate the necessity of understanding geographical and diachronic variations in body size described by Purdue, Compton, and Wolverton, in relationship to human activity in other regions in North America. This is a preliminary step toward determining the ratio of males to females in ancient deer populations. After final analysis and publication, the data from this study will be made available on open access D-bases at both the University of Nottingham and the University of Florida in Gainesville as a new research platform for future investigations.

Canuto, Marcello [26] see Horowitz, Rachel

Canuto, Marcello (M.A.R.I./Tulane University)**[256]** *The Dynamics of an Ancient Hegemony: How the Classic Snake Kingdom Rewrites the Story of lowland Maya Political Organization*

The political organization of the Classic Maya has been a hotly contested topic for many years. Since the 1930s, interpretations have fluctuated between visions of large-scale centralized states and small-scale decentralized polities. However, the recognition of a particular body of data in the inscriptions—statements of royal subordination and allegiance—is giving rise to a new consensus that obviates this well-worn dichotomy.

This introductory paper will set the scene for this session ahead without establishing a programmatic bias. It describes the history of changing models for lowland Maya political organization and how scholars have reconciled previously opposed sets of archaeological evidence. Further, it will acknowledge the growing importance to this subject matter of increasingly better understood epigraphic data. We suggest that the next challenge is the proper conjunction of these data sets in order to develop a more nuanced model for lowland Maya political organization.

[256] *Chair***Cap, Bernadette (University of Texas-San Antonio)****[26]** *The Workings of Classic Maya Marketplace Exchange from the Perspective of the Buenavista del Cayo Marketplace*

Marketplace exchange among the Classic Maya is frequently inferred from the degree of homogeneity in consumption practices among households of differing statuses. The actual presence of marketplaces among the Classic Maya has been a point of debate, but recent empirically based investigations at a few Lowland sites have provided evidence for their existence. The Late Classic marketplace located in the East Plaza of Buenavista del Cayo, Belize is such an example. Examination of marketplace exchange from the marketplace itself provides a unique perspective that adds to and complements the information household consumption patterns offer. In this presentation, I discuss the types of goods exchanged in the Buenavista del Cayo marketplace and the efforts involved in its maintenance. Household goods made of raw materials locally available, such as chert and limestone, and non-local materials, such as obsidian, were exchanged in the Buenavista del Cayo marketplace, which indicates that multiple communication networks were involved in sustaining a marketplace that served to provision households. The location of the Buenavista del Cayo marketplace in the site center has implications for its administration. Direct empirical evidence for administration is lacking, but I offer possible avenues of control over the marketplace by different status groups.

Capece, Matthew (Quinnipiac University), Tucker Hlad (Columbus State Community College) and Jaime Ullinger (Quinnipiac University)**[149]** *Analysis of Color and Fracture Patterns on Burned Bones from the Békés 103 Bronze Age Cemetery*

In this study, we use color and fracture patterns of burned bone to reconstruct cremation temperatures and the conditions of the body prior to cremation in highly fragmented skeletal material from a Bronze Age cemetery in Eastern Hungary. Using a Munsell Soil Color Book, we were able to qualitatively measure the color of cremains in order to estimate burning temperature. Determining whether or not the body was burned with flesh relied on two methodologies: the analysis of color patterns across the body and the identification of specific heat-related bone fractures. With the majority of bones being a shade of white, it was estimated that the crematory fires likely exceeded 800°C. Thumbnail fractures along long bones and the prevalence of nonwhite bones on specific areas of the body, such as where two bones articulate, both suggest that the body was cremated while flesh was on the body. Together, these observations indicate that the people of this region during the Bronze Age took care to cremate the dead soon after death and then carefully tended to the pyres, allowing them to maintain such high temperatures.

Capece, Matthew [149] see Bormann, Edward

Capone, Patricia**[30]** *Museum Archaeology in the United States: Refocusing Research Questions and Updating Methodologies Alongside NAGPRA*

Collections in museums are components of refocusing and revising archaeological interpretation in the United States alongside the Native American Graves Protection and Repatriation Act (NAGPRA). Review of collections as prompted by NAGPRA is improving documentation and interpretation of those collections subject to the Act and beyond, across sites and regions. Previously incomplete archaeological contexts may be refined and these bring potential for updated research questions and methodologies. A selected summary of recent projects highlights the benefits of improved collections documentation, consultation involving multiple perspectives on collections and research questions, and the potential for shaping methodological advances and analytical techniques toward updated research questions. Each of these benefits enhances the public relevance of archaeological research and education.

Capone, Patricia [265] see Costello, Laura

Capriata Estrada, Camila (Proyecto Qhapaq Ñan - Ministerio de Cultura del Perú) and Raúl Zambrano (Proyecto Qhapaq Ñan - Ministerio de Cultura del Perú)

[233] *Molle and its Relationship with the Qhapaq Ñan*

Molle is a prehispanic settlement located the Lurin Valley, central coast of Peru. Preliminary data indicates that it was primarily occupied during the Late Intermediate Period and the Late Horizon. During excavations performed in the years 2014 and 2015, we were able to determine that one of the major sections of the Inca road system or Qhapaq Ñan, the one connecting Pachacamac to the administrative center of Hatun Xauxa, runs across this site. In this paper, we will discuss the role that Molle played in the political landscape of the valley, as well as its relation with this major road.

Capriles, José [62] see Osorio, Daniela

Capriles, Jose (Universidad de Tarapacá), Calogero Santoro (Universidad de Tarapacá), Daniela Osorio (University College London), Juan Albarracín-Jordan (Fundación Bartolomé de las Casas) and Claudio Latorre (Pontificia Universidad Católica de Chile)

[139] *Mobility Strategies between the Atacama Desert and the Lipez Highlands during the Late Pleistocene*

One of the main constraints limiting understanding late Pleistocene archaeology in South America is the lack of compatible and standardized datasets from scholars working in neighboring countries. Here, we present interdisciplinary collaborative work for discussing the nature of human mobility between the Pacific Coast, the Atacama Desert, and the Lipez Highlands of Chile and Bolivia at 21° S. In an attempt to identify mobility strategies by human populations occupying these drastically different environments, we describe settlement and stone tool utilization patterns. Our results suggest that during the late Pleistocene, a broad logistical pattern of mobility supported by a curated technological strategy was in place, consisting of sizeable occupations near wetlands in lower elevations and temporary and logistical visits to the highlands. Therefore, we propose the existence of a very early circuit that linked the coast with the then largely forested aquifers of the Atacama and in turn, to the Andean highlands. Specific environmental conditions made this circuit possible and its eventual disappearance during the early Holocene, motivating new kinds of mobility strategies. Finally, the establishment of this circuit is consistent with previous inferences about the progressive nature of human adaptation of high-elevations.

Caramanica, Ari

[75] *Upward Mobility among Smallholders of the Desert North Coast of Peru*

Mobility among smallholders or campesinos is a crucial element for understanding the development of both ancient and modern-day Peru. In the case of the ancient agricultural landscape of Mocán, the movement of people, products, and possibly plants, lead to increasing network complexity eventually culminating in the area's incorporation into an important coastal polity. Archaeological evidence suggests changing approaches to landscape and water management over the 2,000 years of occupation in the area can be correlated to the fluctuating mobility and interchange between Mocán and neighboring regions. Mocán is located in the Paján desert region on the north coast of Peru, and in both the past and today occupation is contingent upon mitigation of environmental and seasonal change, resulting in a form of small-scale mobility that is unique to smallholders. Experiments in landscape and agricultural strategies by smallholders in Mocán affected the environment in different ways over time, linking the area to greater socioeconomic networks represented in the archaeological record by landscape formations, architecture, and other forms of material culture.

Carballo, David [129] see Hernandez Sarinana, Daniela

Carballo, David (Boston University)

[129] *Urbanism and Domestic Life in the Tlajinga District, Teotihuacan: New Research*

Teotihuacan's Tlajinga district comprises a cluster of neighborhoods of primarily common status apartment compounds, covering approximately 1km² in the south of the city. Previous investigations at one of them, 33:S3W1 or "Tlajinga 33," provided valuable information concerning daily life in the urban periphery. The Proyecto Arqueológico Tlajinga Teotihuacan (PATT) has thus far involved excavations at two other compounds (designated 17:S3E1 and 18:S3E1) and along the southern extension of the Street of the Dead, in addition to geophysical prospection of these areas and others within the district. In this paper, I provide a summary of fieldwork and contexts for the artifact analyses and chronological considerations of papers to follow. I discuss processes of urban sprawl into the periphery, the construction of the southern extension of the Street of the Dead, changes in domestic architecture, a domestic obsidian workshop, and ritual caches and termination deposits that are informative as to the social status and activities of the residents of the compound.

[169] *Discussant*

[129] *Chair*

Carballo Marina, Flavia [205] see Nuevo Delaunay, Amalia

Cárcamo, Javier [206] see San Roman, Manuel

Card, Jeb (Miami University) and Marc Zender (Tulane University)

[212] *An Inscribed Flask from Tazumal: Historical Evidence for a Political Relationship between Copan and Western El Salvador*

Re-analysis of an inscribed flask excavated by Stanley Boggs in 1952 from a burial in the main pyramid at Tazumal is the first Classic Maya written text found in a primary deposition context in El Salvador. It is also the first historical evidence for political interaction between Copan and El Salvador, a situation that has long been suggested based on archaeological evidence including the use of Copador ceramics in both Honduras and El Salvador and the presence of other elite Classic Maya goods in monumental contexts at Tazumal and Campana San Andres. The Tazumal flask is the only Classic hieroglyphic text from El Salvador naming a recognizable individual, tagged as the property of Copan's most powerful lord, K'ahk' Uti' Witz' K'awiil, who, during the seventh century, emphasized expanding his dynasty's influence outside of the Copan pocket. It is also one of only a few miniature Classic Maya vessels tagged with an individual's name. The presence of this vessel in a burial in a monumental context at the largest Classic site in El Salvador suggests a diplomatic history to this vessel, and brings the relationship between Copan and Classic El Salvador into sharper focus.

Carder, Nanny [222] see Crock, John

Cardona, Karla [27] see Kovacevich, Brigitte

Carey, Mia [90] see Troccoli, Ruth

Carey, Mia (University of Florida)

[287] *Conducting Public Archaeology on Private Land: The Case Study of Yarrow Mamout at 3324 Dent Place, N.W.*

Since 1979, the Archaeological Resources Protection Act has secured protection of archaeological resources and sites which are located on public and Native American lands. Unfortunately, it is the archaeological sites and resources located on privately owned land that are under the most immediate threat of destruction due to private and commercial development interests. So what happens when a concerned citizen notifies the D.C. City Archaeologist that an early nineteenth century African Muslim site is being threatened? This paper outlines the archaeological survey conducted between June and September 2015 to answer this question. The property once belonged to Yarrow Mamout, a prominent African Muslim who became famous after he sat for two well-known nineteenth century painters. The archaeological survey entailed GPR, geoarchaeology, mechanical testing, and manual excavation of STPs and test units.

[287] *Chair*

Carino, Tanya [125] see Terry, Richard

Carlock, Bradley (Mississippi State University) and Tiffany Raymond (Mississippi State University)

[277] *Comparison of Surface Data Collection Methods at Freshwater Mussel Shell Rings in the Mississippi Delta: When is Enough, Enough?*

For the most part, freshwater mussel shell rings in the Mississippi Delta have not been systematically tested to determine whether they are contemporary, what their function may have been, how they were created, etc. This is in part due to the massive undertaking it requires to pull the necessary data from the field. Controlled surface collection is one of the methods that have been used to do this, and while it is labor-intensive, it can provide a wealth of information about a site. This paper will compare the results from five mussel shell ring sites in the Mississippi Delta to determine if the methods employed were overkill, just enough, or if a compromise somewhere in the middle would have been adequate to glean the necessary information to answer the aforementioned questions.

Carlson, Kirsten [16] see Bement, Leland

Carlson, Justin (University of Kentucky)

[120] *Archaeological Investigations of Deeply Stratified Deposits at Crumps Sink, South-Central Kentucky, USA*

In the holokarstic Sinkhole Plain, sinkholes provided access to cave entrances for shelter, water, chert outcrops, and contain distinct microenvironments. As closed basins, sinkholes accumulate sediment from the surrounding catchment, burying archaeological deposits, sometimes rapidly. Therefore, these sites can provide critical information concerning paleoenvironmental change and human use of the surrounding landscape. Excavations were undertaken at Crumps Sink in the summer of 2015 to assess the chronology of occupation, determine the range of prehistoric activities, and assess the geomorphological and pedological history of the site. Stratified midden deposits spanning the Archaic and Woodland periods were encountered to a depth of 3.8 meters below surface. The density of archaeological deposits suggests the site was repeatedly occupied throughout the Archaic and Woodland periods. Geoarchaeological analysis of macro-stratigraphy, loose sediment samples, micromorphological samples, and associated archaeological material allow for an in depth discussion of the depositional and pedogenic history of the sink in relation to climatic and anthropogenic impacts over time. This work demonstrates that sinkholes should be investigated beyond traditional shallow testing because many may contain deep, well-preserved archaeological deposits.

Carlton, Allison (University of Massachusetts-Boston)

[70] *A Theory on Cultural Inversion: Resistance, Resilience and Agency within the Archaeology of Colonialism*

Colonial studies have progressed exponentially in archaeology, but such studies can suffer from contextual limitations. Analyzing colonialism in many different social contexts adds to its potential as a lens through which to study the archaeological record. Diverse applicability would allow archaeologists an opportunity to make sense of colonialism's profuse influence on the people it affects. Throughout the nineteenth-century, the Nipmuc from eastern Massachusetts faced many of the common processes of colonialism such as religious conversion, land acquisition, and economic and political control. However, their identities were negotiated by various means. Lately, theories of colonialism in archaeology have begun to analyze the identities of the people who in the past tended to be erased by the dominant settler party when confronted by colonialism. This paper presents a study of the Massachusetts Nipmuc through the lens of colonialism as a theoretical construct to show how they may have negotiated their identities in their particular colonial setting. In particular, items of personal adornment are analyzed to assess whether there is evidence that the Nipmuc participated in the social discourse and practice surrounding respectability or whether they attempted to culturally invert or mimic such notions of respectability to cope with racism.

Carmody, Stephen [6] see Sherwood, Sarah

Carmody, Stephen (Sewanee: University of the South), D. Shane Miller (Mississippi State University), Thaddeus Bissett (Cultural Resource Analysts, Inc.), Lydia D. Carmody (University of Tennessee, Knoxville) and David G. Anderson (University of Tennessee, Knoxville)

[49] *Secrets from within the Shell: Exploring the Differences between Shell-Bearing and Shell-Free Deposits at 40DV307 along the Cumberland River, Tennessee, USA*

The Bell Site is a multicomponent prehistoric site located along the Cumberland River in Central Tennessee. Archaeological fieldwork conducted in the summer of 2010 and 2012, including riverbank profiling, auger testing, unit excavation, and column sampling, revealed a long and dynamic occupational history of the site. Here, we integrate multiple lines of evidence including paleoethnobotany, zooarchaeology, and geoarchaeology, to unravel the site's

complex (pre)history and explore the functional differences between the sites Late Archaic shell midden deposits and the later Woodland-period shell-free settlement deposits.

Carney, Molly

[19] *Paleoethnobotany on the Columbia Plateau: A Case Study from the Pend Oreille River Valley*

Paleoethnobotanical studies of hunter-gatherer archaeological assemblages on the Columbia Plateau in the Pacific Northwest are exceedingly rare and often poorly reported. The Flying Goose Site (45PO435), located along the Pend Oreille River in northeastern Washington, offers an opportunity to examine a Plateau culture area archaeobotanical assemblage in greater detail. Summer excavations in 2014 and 2015 indicate that this late Prehistoric site appears to have been some form of small structure, which was likely purposefully burned and subsequently buried under relatively sterile silts. The unusually well preserved structural remains at Flying Goose offer an excellent opportunity to examine Plateau architecture, internal and external use of space, and both nutritional and technological use of plants. The presence of plant food remains, the lack of artifacts or zooarchaeological data, and comparison to regional and continental ethnographic knowledge allows us rethink commonly established notions of gender and mobility on the Columbia Plateau.

Caromano, Caroline (Museu de Arqueologia e Etnologia/USP/Brazil) and Rui Murrieta (Instituto de Biociências/USP/Brazil)

[167] *Adding Fuel to the Fire: An Ethnoarchaeological study of Fire amongst the Asurini of Xingu, Brazilian Amazon*

Research conducted in the Amazon point to the importance of anthropic fire in the history of people and the forest itself, being a common element in traditional agriculture and responsible for changes in ecosystems and soil productivity. Despite its importance, fire is not subject to systematic study in Amazonian archaeology. Few efforts are made in actively searching for evidences of its use in archaeological contexts, being such evidences documented opportunistically when casually observed during excavations. Furthermore, when dealt with, fire is treated from a strictly technical approach. Few interpretations are made on its possible roles in social relations, and little attention is given to the social processes behind the production and use of fire and the formation of its archaeological record. Through ethnoarchaeology amongst the Asurini of the Xingu River, southern Amazon, this work will present technical and symbolical aspects on the use of fire, identifying and classifying the types of combustion structures and the employment of fire in different areas of activity, with the intention on creating models on how diverse types of fire produced by the Asurini may generate different features and distinct assemblages of remains.

[167] *Chair*

Carpio, Edgar

[20] *Ritual to the Hills and Water in Mejicanos, Amatitlán, Guatemala: The Rock Art Evidence*

The Mejicanos archaeological site is located on the side of a hill surrounded by other hills and a volcanic complex, in addition to beach to Lake Amatitlán. This situation apparently sufficed for implementation of major religions to water and hills as evidenced by the ceramic offerings deposited in the lake during the Classic Period as well as the many petroglyphs found in the rocky site sets. These consist mainly recorded in the rocks and miniature representations of temples, usually with cavities at the top for liquid acquisition. We assume that on the site important rituals related to the cult to the deities of water and hills were carried out.

Carr, Christopher (University of Cincinnati), Vernon Scarborough (University of Cincinnati), Nicholas Dunning (University of Cincinnati) and Elizabeth Haussner (University of Cincinnati)

[64] *An Agricultural Risk Mitigation Strategy using Multiple Water Sources, Chaco Canyon, New Mexico*

From approximately 850 to 1250 A.D., despite an extremely arid environment, the ancient people of Chaco Canyon were able to marshal the food production and engineering skills to build a string of "Great Houses," several containing hundreds of rooms. This poster describes a system of multiple water sources supplying the agricultural area below the Great House at Peñasco Blanco. High-resolution aerial lidar was key to identifying the multiple water sources. Rainfall and snow are the source of domestic and agricultural water in this area which lacks perennial streams. During the growing season, rainfall arrives in intense, brief, locally isolated bursts. This pattern of rainfall presents risks of too much rain, rain in the wrong place, and rain at the wrong time. The ancient Chacoan people managed these risks by: (1) utilizing channel flow from drainages of multiple sizes and surface flow off of slick rock areas, (2) storing water in potholes, (3) canalizing water to and away from posited fields, and (4) reservoir containment. Our study used lidar-based digital elevation models (DEM) to identify flow channels, water storage areas, and watershed sizes. On-the-ground examination and excavation were used to validate the findings.

Carr, Chris [121] see Brewer, Jeffrey

Carr, Robert (AHC)

[246] *Belle Glade Circular Earthworks: A New Interpretation*

A summary of prehistoric circular earthworks in the Lake Okeechobee and northern Everglades is provided. Their forms and their relation to the area's wetlands are discussed, and a hypothesis as to their function is provided.

Carrasco, Michael (Florida State University)

[209] *The "Problem" in the Ecology of Images*

In *The Shape of Time* (1962) George Kubler suggested that formal change results from a chain of solutions to problems that alter as the solutions accumulate. While this concept has been influential in studies on formal change, his notion of "problem" remains underdeveloped. This paper takes Kubler's formulation of "problem" as a starting point for abducting meaning in works for which texts are lacking. By attending to the "problem" as the locus of dynamic change and the link to other social regimes, the paper utilizes the advantage that duration affords to propose that a series of questions about objects emerges that is not, or not wholly, reliant on texts or ethnographic analogies. This has the effect of expanding art history into the territory of anthropology, as structural processes gain greater significance than the history of specific iterations or iconographic content. Formative Period Maya stucco masks, cache vessels, and effigy censers of the Classic Period exemplify how changing solutions reveal conceptual "problems" that provide access to meaning and the role of the image. The goal is to better understand the networks among people and images—what might be called the ecology of images.

Carrasco, Ramón [256] see Martin, Simon

Carriere, Ed [63] see Croes, Dale

Carroll, Lynda

[75] *Smallholders, Settlements, and the Reimagined State: How New Grammars of Modernity Impacted Land and Labor in the Late Ottoman Empire*

Archaeological studies of the modern world often focus on the effects of the “global” on the “local.” Understanding smallholder experiences in the modern period requires us to examine—to varying degrees—the economic and social consequences that global capitalism, colonialism, and nationalism had on people at the local level, as well as how the construction of new grammars of modernity affected daily lived experiences. In this paper, I focus on the impacts of these new grammars on smallholders in the modern Middle East who lived under the Ottoman Empire. In the late nineteenth century, many smallholders living in the shadow of the Ottoman state found themselves impacted by shifting land tenure policies that affected their access to land, and new definitions of civil society and individual rights. While some became laborers for privately held large farms, others faced dispossession as a result of large-scale population movements of the late nineteenth and early twentieth centuries (both voluntary and involuntary). In this paper, I will compare variations in settlement patterns in Anatolia and Transjordan as a way to examine how these new grammars and realities affected different types of smallholders.

Carroll, Jon (Oakland University)

[121] *Experimenting with Multilevel Agent Based Archaeological Modeling in NetLogo*

Agent Based Modeling (ABM) has become increasingly popular because of its relatively shallow learning curve and robust capacity for simulating social and environmental phenomena. This paper discusses new developments in ongoing work simulating social interaction in Precontact small-scale societies using NetLogo, a freely available software package. Model design, assessment, and experimentation of a multilevel ABM are discussed, as well as how the simulation results compare to real world, geospatially referenced archaeological datasets drawn from the Great Lakes region of North America.

Carroll, Beau (Eastern Band of Cherokee Indians), Tom Belt (Western Carolina University), Alan Cressler and Jan Simek (University of Tennessee)

[131] *Talking Stone: Cherokee Syllabary Inscriptions in Dark Zone Caves*

Caves have offered the Cherokee people concealment before and after contact with Europeans. With the invention of Sequoyah's Syllabary a way to record these hidden activities became available. A number of caves in the southeastern United States contain such historical inscriptions and interpreting these can tell archaeologists about who made them and when they were made. This paper considers several such inscription caves, located in the area of north Alabama, north Georgia, and southeastern Tennessee, with Sequoyan Syllabary on the walls. They offer us a better understanding of the Chickamauga Cherokee, the Lower town Cherokee, and the birth of the Cherokee Nation. On the surface, the Cherokee were compliant with the demands of the overwhelming civilization, but traditions were kept alive by concealment. The writing in caves in the southeastern United States can provide missing links to historical accounts and provide new archaeological research avenues for the future.

Carroll, Jon [199] see Perez, Daniel

Carroll, Sean (University of Wyoming)

[232] *These are the Flintknappers: A Case Study Concerning the Ability to Measure Flintknapping Skill Variation in the Analysis of Debitage*

One application of experimental archaeology is attempting to understand variations in flintknapping skill. These experiments often have flintknappers of varying skill levels attempt to replicate different variants of prehistoric stone tools. Previous studies of skill level in thedebitage produced during flintknapping are restricted to qualitative means of analysis. To add to the expanding collection of experimental archaeology that attempts to identify flintknapping skill, this paper addresses whether quantitative analysis can be used to distinguish individual flintknapper skill levels indebitage analysis. Additionally, in an attempt to produce a more controlled flintknapping environment, the experiment reported in this paper implemented liquid porcelain biface casts as the objective pieces. Using a more controlled objective piece, this paper attempts to take the quantitative analysis that has previously been done in experimental archaeology on formal prehistoric tools and apply it todebitage to see if similar indications of skill can be identified.

Cartagena, Nicaela, Michael Lawrence (Pacbitun Research Archaeological Project), Sheldon Skaggs (Pacbitun Research Archaeological Project) and Terry Powis (Pacbitun Research Archaeological Project)

[120] *The Geophysical Investigations at the Tzib Group in Pacbitun, Belize*

The archaeological site of Pacbitun is one of the ancient sites that were inhabited by the Maya for approximately two thousand years. It is located in the west central side of Belize, near the town of San Antonio. Exploration of the surveyed areas revealed a smaller archaeological site in 2011 known as the Tzib Group, also known as “Mano Mound” due to the significant amounts of mano fragments found on the surface. In the 2014 summer season, geophysical data was collected using an instrument called the magnetometer. Data analysis of this survey showed a large rectangular anomaly within five meters of Mano Mound itself that became part of the focus to the 2015 summer excavation. Within the excavation units a row of limestone rock terminating at the mound was found, which is probably a terrace that the Maya placed there to level out their farm land. Other artifacts that were found within the excavation units were mano and metate fragments, along with hammer stones and pottery sherds. Geospatial analysis was also used to track the features of the Tzib Group area in regards to where other possible terraces may connect with structures in the area.

Cartagena, Nicaela [234] see Skaggs, Sheldon

Cartajena, Isabel [139] see Loyola, Rodrigo

Cartajena, Isabel (Departamento de Antropología, Universidad de Chile)

[249] *Discussant*

Carter, Brian [123] see Marcum-Heiman, Alesha

Carter, Michael (Director, Industry Relations, Master in Digital Media)

[140] *Virtual Archaeology, Virtual Longhouses and "Envisioning the Unseen" within the Archaeological Record*

In the 1960s, Ivan Sutherland envisioned a time in the near future in which people would be able to physically enter into an alternative, "digital" world. The ability to not only see the environment around them, but also to touch, smell, hear, and be affected by the environment itself would provide a unique digital phenomenological experience where viewers become participants and build on their own personal narratives in a non-linear, almost life-like, virtual experience. In reimagining a fifteenth century Northern Iroquoian Longhouse within a virtual 3D environment, we attempt to address issues of agency, authenticity, authority, and most importantly, transparency within virtual heritage reconstructions. Virtual Archaeology and our ability to harness the technology in an applied, innovative, and experiential way has allowed scholars, Descendants, and the public to "envision the unseen" within the archaeological record. As such, archaeological virtual reconstruction through virtual reality has become a powerful tool in the interpretation of archaeological landscapes and artifacts as a means of knowledge-building and meaning-making. Thus, Virtual Archaeology is moving from being evidenced-based to evidence-informed through a natural progression allowed by the evolution of technology and the growth of capabilities, user experience, and expectation.

Carter, Alison (University of Illinois Urbana-Champaign), Cristina Castillo (University College London), Rachna Chhay (Apsara Authority, Cambodia), Tegan McGillivray (University of Wisconsin-Madison) and Yijie Zhuang (University College London)

[262] *Household Archaeology in Angkorian Cambodia: Preliminary Results and Challenges for Future Research*

This paper presents the results from the 2015 excavation of a house mound within the Angkor Wat enclosure. Although household archaeology is well established in other tropical locations, notably Mesoamerica, few households have been closely examined in southeast Asia. In this paper, we discuss some of the preliminary findings from our excavation of an Angkorian house mound, as well as research on the use of space around the mound and the potential for household gardens. A comparison with household studies amongst the Maya highlight potential fruitful avenues for future research as well as challenges unique to studying households of the Angkorian period.

Caruso Fermé, Laura [49] see Monteiro, Patrícia

Carvajal Contreras, Diana [14] see Iizuka, Fumie

Carvajal Contreras, Diana

[14] *Use of Aquatic and Stone Tools at Three Colombian Caribbean Sites near Canal del Dique*

This work derives from research in the ongoing research project "Evaluation of Zooarqueológica de Concheros cerca al Canal del Dique." We present the preliminary results of the archaeological research of three sites sampled near Canal del Dique: Monsú (5000 a.C.), Puerto Hormiga (4000 a. C), and Leticia (a shellmound from the twelfth century A.D.). Samples of animal remains were recovered from 1/8 inch mesh screening. These samples were analyzed for taxonomic, taphonomic, and quantification analysis. Starch grain analyses were conducted on stone tools and human remains. Use wear and experimental analyses were applied on stone tools, which were used in different subsistence activities. This information is contrasted with current archaeological information from the Caribbean Lowlands. We conclude that the diversity and abundance of aquatic resources are linked to the location of the sites, suggesting that the most representative species collected by precolumbian residents, for occasional meals, were mollusks and vertebrates from brackish environments, mangroves, estuaries, swamps, and muddy sand mixed areas.

[14] *Chair*

Casana, Jesse (Dartmouth College) and Claudia Glatz (University of Glasgow)

[12] *Settlement Systems and Land Use Strategies in the Upper Diyala/Sirwan River Valley, Kurdistan Region of Iraq*

This paper presents results of a regional archaeological survey in the Upper Diyala/Sirwan River valley, a study area that straddles the highland landscapes of the Zagros Mountains and lowland plains of southern Mesopotamia. Historically constituting a key communication route between these regions, the Upper Diyala offers a unique laboratory for analysis of changing subsistence strategies and interactions among and ancient communities who inhabited very different upland and lowland environments. From 2013–2015, our project has undertaken to document settlements of all periods, to map relict fields and water management features, as well as to understand the geomorphological and environmental history of the area. Based on our results to date, this paper explores the differing trajectories of change in settlement organization and agricultural strategies in early prehistoric (7500–4500 B.C.), Bronze Age (3000–1000 B.C.), and Parthian/Sasanian periods (250 B.C.–A.D. 650), highlighting key distinctions that are evident both geographically and temporally and how these reflect the cultural dynamics of the region.

Casar, Isabel (Instituto de Física UNAM), Jose Ramon Gallego (Instituto de Investigaciones Antropológicas Univer), Jose Concepcion Jimenez (Instituto Nacional Antropología e Historia), Edith Cienfuegos (Instituto de Geología, Universidad Nacional Autonoma) and Pedro Morales (Instituto de Geología, Universidad Nacional Autonoma)

[20] *Diet and Mobility Patterns of Hunter-Gatherers and Full-Time Farmers from the Tehuacan Caves of Tehuacan, Puebla*

The transition between the diet of the hunter-gatherers and the full-time farmers is described on an individual level based on evidence from three ancient caves in Tehuacan, Puebla. The populations studied occupied the caves for almost 8,000 years from 6800 B.C. to A.D. 1520. The reconstruction of their diet was done on the basis of stable isotopic values of $\delta^{13}C$ and $\delta^{15}N$ of the bone collagen as well as the $\delta^{13}C$ and $\delta^{18}O$ from bone-bioapatite and from a series of slices from molars, alternating on them the isotopic analysis of dentine-collagen and dentine-bioapatite.

The results show a gradual dietary transition between the group of hunter-gatherers from the ancient periods with about a 50 percent C3 signature in both dietary components and the diet of the full-time agricultural group from the later periods with a high ingestion of maize close to 90 percent in the whole diet and probably some gathering of CAM plants, and 100 percent C4 signature in the protein ingested, from animals hunted in the maize fields or semi-

domesticated. Also, the interpersonal variation of the diet consumed shows interesting correlation with the mobility patterns between the hunter-gatherers and the full-time farmers calculated from their $\delta^{18}\text{O}$ values.

Cascalheira, João [170] see Bicho, Nuno

Cascalheira, Joao (ICArEHB - Portugal)

[211] *Changing Weapons in a Mutable Landscape: Exploring the Relationship Between Upper Paleolithic Weaponry Variability and Drastic Environmental Changes in Western Europe*

Lithic industries from the European Late Pleistocene archaeological record are marked by the presence of one of the most numerous and diverse set of artifacts identified as projectile weaponry tips. Variability in the morphology and technology of these tools has long been used for organizing the Upper Paleolithic archaeological record into distinct cultural and chronological units—the so-called techno-complexes—validating a direct association between transformations in projectile technology and shifts in other domains (e.g., subsistence, technology) of hunter-gatherers' adaptive systems. Widespread cultural changes occurring during this time-span are frequently thought to have been triggered by abrupt climate events and some of the modifications occurred in the design and technology of projectiles have been putatively defined as technical solutions to enhance performance and reduce risk in changing environments.

This paper represents a first attempt to characterize how modifications in the design of Upper Paleolithic lithic projectiles correlate with abrupt environmental changes and how they possibly enhanced human fitness under particular selective environments.

[211] *Chair*

Cascon, Leandro (Museu de Arqueologia e Etnologia/USP/Brazil) and Rui Murrieta (Instituto de Biociências/USP/Brazil)

[125] *Root, Fruit and Dirt: Using Ethnoarchaeology and Archaeobotany for Constructing Reference Collections of Plants in Activity Areas in Eastern Amazon*

In the Brazilian State of Pará, Eastern Amazon, indigenous Asurini populations living in the middle course of the Xingú River currently face the challenge of maintaining traditional lifeways in a situation of great ecological and social change, due to the construction of Belo Monte, one of the world's largest hydroelectric dams. Amongst their practices, the cultivation of diverse varieties of manihot, sweet-potato, beans, maize, and other crops is an important aspect of Asurini culture, and one which they have strived to maintain through over a century of conflict-induced migrations. The work here presented is the result of an ongoing study conducted amongst the Asurini, with the objective of better understanding the diverse importances that cultivated plants possess amongst these populations, as well as of assessing how these different forms of use may be identified in the Asurini archaeological record in the region, using the comparative analysis of phytoliths and starch grains found in artifact and soil samples from present day activity areas, as well as from past Asurini villages.

Caseldine, Christopher (Arizona State University)

[289] *Shifting Perceptions: An Examination of Landesque Capital and Landscape Perceptions within Hohokam Canal System 1*

The Hohokam that occupied the area now covered by the present city of Phoenix, Arizona, and surrounding cities, constructed one of the largest canal systems in the ancient world. Of the systems operated by the Hohokam, Canal System 1 was the largest irrigation system built and maintained by the Hohokam. Despite its size, it is the least understood of the major irrigation systems within the lower Salt River Valley, the area often identified as the Hohokam core. Recently, a project to reconstruct the developmental history of Canal System 1 was undertaken to fill in this void in data. Preliminary results from the long-term Riverview excavation project, located near the system's headgates, indicate that Canal System 1 may have significantly expanded in size sometime during the Preclassic/Classic Transition (c. A.D. 1100–1300), a period previously characterized as a time of increasing water uncertainty. Using settlement data, I will examine the association between shifting landscape perceptions and shifting settlement patterns within Canal System 1 from a landesque capital perspective, and the implications for settlement patterning across the lower Salt River Valley.

Cases, Laurent [288] see Hoggarth, Julie

Casserino, Christopher (Spokane Tribe of Indians) and Jennifer Pietarila

[29] *Preserving Tribal Resources on the Reservation*

The Spokane Tribal Preservation Program's work within Reservation boundaries focuses on locating and monitoring tribal resources along the Spokane River and upland areas by a tribal field crew. Artifacts recovered from field surveys and excavations are curated within a tribal collections facility. Utilizing a partnership between its staff and tribal members, the Program is able to identify these important resources and provide a rich layer of tribal history to these objects. Through collections access and digital-age crowd sourcing techniques, the Preservation team integrates the knowledge of tribal elders and other community members into the processing of artifact information and archaeological site provenience. The incorporation of multiple viewpoints takes into account that every person or family is connected to a person, place, or object in a unique way. Through this unique partnership, life is given to tangible objects, cultural tradition, and traditional cultural places.

[203] *Discussant*

Castanet, Cyril [96] see Nondédéo, Philippe

Casteel, Cassandra (MU-Anthro) and Christine VanPool (MU-Anthro)

[237] *The Development of the Feathered Serpent in Mesoamerica and the American Southwest*

Mesoamerican and southwestern researchers debate the origins, meanings, and influence of the feathered serpent. Some believe that the southwestern horned serpent is derived from the Mesoamerican feathered serpent, while others believe the southwestern serpent tradition developed largely independently from other regional traditions. Those contending that southwestern and Mesoamerican serpents are connected rely on similar meanings of the serpents, such as its association with rain and fertility, while those arguing for local developments rely on differences in morphological traits of the serpents (e.g., Aztec's Quetzalcoatl being a rattlesnake with a body covered in quetzal feathers whereas Zuni's Kolowisi has a smooth, featherless body with a headdress of turkey feathers and a wooden horn). Both perspectives tend to view the relationship in an "all-or-nothing" manner, without really

considering the possibility for combinations of historically shared and independently developed traits. Here, we use phylogenetic analysis to examine morphological data (e.g., placement of plumes, tail form, and mouth and eye shape) and archaeological context (e.g., associated mural images, architectural features, etc.) to identify homologous and analogous traits. Our results break down the dichotomy by identifying which traits reflect historical connections, and reconstructing the historical development of classes of serpents (e.g., Aztec and Maya).

Castells Navarro, Laura [103] see Büster, Lindsey

Caster, Joshua [254] see Fairley, Helen

Castilla-Beltrán, Alvaro (RMA student Leiden University Faculty of Archaeology)

[220] *Modelling Archaic Forager Mobility: A Discussion on the Application of Agent-Based Models (ABMs) to Forager Mobility Strategies in the North-Eastern Caribbean Archaic Period*

Diverse types of models have been proposed to shed light to Caribbean colonization process as well as general patterns of mobility, exchange, and connectivity. These models have hitherto been narrative, theoretical, and statistical and their products have widened our understanding of the archaeological record. Agent-based models (ABMs) represent a promising step forward on the modelling approach to Caribbean archaeology by placing attention to the interactions among agents and agents and the environment in order to assess counterintuitive effects in the emergence and self-organization of social structures. This innovative tool brings the opportunity to create a series of dialogic encounters between environmental data, the archaeological record, and foraging models based on the ethnography and ethnoarchaeology, thus allowing the possibility to pre-test sets of assumptions with the click of a mouse. Some variations of foraging mobility models will be presented in order to explore the potential of ABMs and to provide new insights into the first humanization of the north-eastern Caribbean and posterior cultural development throughout the Archaic Period.

Castillo, Luis Jaime [206] see Saldaña, Julio

Castillo, Mario (California State University, Dominguez Hills)

[251] *Hñāhño Narratives of San Ildefonso, Mexico: Social Memory in the Form of Oral History*

Oral history is the process of audio-recording first person accounts of experiences, stories, and memory from living witnesses. Oral history has proven to be a valuable resource for archaeologists. It is argued that oral history research is important for foregrounding subsequent archaeological research. In the summer of 2015, 10 hours of audio-recorded personal narratives were recorded from five Hñāhño/Spanish speakers in the colonial of El Bothe, San Ildefonso, Queretaro, Mexico. Hñāhño speakers in Mexico are commonly referred to in the anthropological literature as Otomi Indians. In the pueblo of San Ildefonso, local residents continue to speak Hñāhño along Spanish and largely practice an agrarian lifestyle. This presentation provides a summary of these interviews and discusses the relationship between personal and social memory.

Castillo Butters, Luis Jaime [102] see Cusicanqui, Solsiré

Castillo Sánchez, Nina (Nina Castillo Sánchez)

[151] *"Textileras": Mujeres de prestigio o formalismo social*

Las últimas investigaciones sobre patrones funerarios en la costa central peruana exponen, principalmente, entierros femeninos de élite dedicados a la actividad textil. Sobre la base de las descripciones del ajuar asociado a la textilería. Estas explicaciones hacen énfasis en los objetos hallados, asumiendo directamente la posición social del individuo, sin mencionar que este ajuar, probablemente, representa el actuar colectivo sobre estándares sociales de enterramiento femenino y no necesariamente corresponde a la actividad y preferencia real del individuo.

Nos preguntamos ¿todas las mujeres enterradas se dedican a la textilería? o ¿todas las mujeres de élite son enterradas con ajuar relacionado a la actividad textil por ser una convención social?

Para responder a estas preguntas analizaremos 18 fardos encontrados durante las excavaciones del Proyecto Qhapaq Ñan, en el sitio Cerro del Oro, Cañete, al sur de Lima.

Se caracterizará a cada individuo analizando los objetos asociados a su cuerpo, singularizando cada contexto, comparándolos con otros contextos de la costa central, evaluaremos la asociación y la convención del ajuar de los individuos femeninos, intentando descubrir si el patrón funerario pertenece a un modelo social mejor elaborado o son arreglos personales de cada individuo y si existen variabilidades que sugieren elecciones personales.

Castillo-Cardenas, Karime (UCLA)

[20] *Ethnoarchaeology of Glassblowing in Tlaquepaque and Tonalá, Jalisco, Mexico*

Blown glass is produced today in Jalisco, Mexico, in places that have a longstanding glass-working tradition. Many parts of the process are done in a traditional way, even though some technological innovations, like the use of gas kilns, have been implemented. During the summer of 2015 an ethnoarchaeological project was carried out in the towns of Tonalá and Tlaquepaque, located in the metropolitan area of Guadalajara, Jalisco, the main center of traditional glassblowing in Mexico today. The research was focused on learning about the technology and the organization of production in order to understand how the technology of glassblowing, which was introduced to Mexico during the colonial period, developed into the present day tradition. Historical research conducted at Archivo General de la Nación in Mexico City provided information to place the glassblowing tradition in historical context. The research also served to gain insights useful in the analysis and interpretation of archaeological glass collections and the remains of glass workshops in the archaeological record.

Castro, Sergio [97] see Romano, Francisco

Catanzariti, Antonietta (University of California, Berkeley)

[12] *The Qara Dagħ Archaeological Landscape: The Relation between Settlement Patterns and Environmental Contexts*

The Qara Dagħ Valley, located 41 km south from the city of Sulaymaniyah in the Kurdistan region of Iraq, is the subject of study of the Qara Dagħ Regional Archaeological Project (QDRAP). This project aims to investigate the Qara Dagħ Valley's archaeological history. The valley is generally known for the presence of the Darban-i-Graw relief, which represents a late third millennium king subduing his enemies. Indeed, textual and visual evidence suggest that this region was exposed to frequent foreign invasions, which, together with its natural setting, may have heavily influenced settlement distribution in the valley. In the 1940s, a team of Iraqi archaeologists carried out a survey of the valley but, until May 2015, when the QDRAP team initiated an investigation in the Qara Dagħ area, no other survey had been conducted. The QDRAP was able to provide fresh information that confirms the archaeological relevance of this area. Although this study is in its early stages, the preliminary analysis of the data collected suggests that the occupation of this area dates at least to the fourth millennium B.C.E.. In this presentation, questions on the environmental characteristics that may have influenced the distribution of the sites identified will be discussed.

Catsambis, Alexis [83] see Neyland, Robert

Cattin, Marie-Isabelle

[242] *Material Culture and Environmental Change at the End of the Late Glacial: Examples from Monruz and Champréveyres, Magdalenian and Azilian Campsites on the Swiss Plateau*

During the Magdalenian in Switzerland, the climate was very cold and the landscape was treeless. Faunal assemblages are dominated by horse but include arctic and alpine species. Lithic assemblages include backed bladelets (used to make composite projectile points) and tools used to butcher and process prey. The appearance of bipoints marks a shift in projectile point technology that coincides with an increase in juniper in the pollen record. The débitage show continuity with the preceding period but for the introduction of soft stone percussion. Faunal assemblages are dominated by red deer, while reindeer all but disappear.

At the beginning of the Azilian, the landscape was a thin tree cover including birch, willow, sea buckthorn, and juniper. Reindeer disappear entirely and red deer and horse dominate the fauna assemblages. The débitage is still oriented towards the production of blades and bladelets, but the products are irregular; frontal exploitation of cores is frequent as is the use of soft and hard stone percussion. We also observe changes in lithic raw material procurement; some flint sources fall into disuse while new sources are exploited. Whether or not these cultural changes are a response to environmental change is the question we will address here.

Catto, Lisa (Portland State University)

[35] *Are Websites Doing What We Want Them To Do? Evaluating the Effectiveness of Websites for Public Archaeology*

Archaeologists widely incorporate websites into public archaeology projects and rely on them as primary vehicles for connecting with the non-archaeologist public for many reasons: they are relatively inexpensive to create, adaptable to most any content, and potentially accessed by a global population. While websites have great potential for advancing public understanding of the human past, to date there has been little consideration of what makes a "good" public archaeology website. Our project addresses this gap. Few resources exist to support archaeologists (who are often untrained in Web communication) in a more intentional use and evaluation of websites. This project addresses the absence of such resources by creating usable tools to guide archaeologists in website creation and evaluation. The tools are grounded in data produced from our qualitative content analysis and Web functionality assessment of 10 archaeology websites. Using the five archaeological themes (e.g., stewardship, access to archaeology) outlined by Franklin and Moe (2012), we are evaluating how—if at all—they are incorporated into the 10 websites and if they could be better showcased/highlighted. Our ultimate goal will be to create a guidebook for developing archaeology websites, including a rubric to guide creation (or assessment) of archaeological content.

[35] *Chair*

Cavero, Yuri [31] see Matsumoto, Yuichi

Cecil, Leslie (Stephen F. Austin State University), Tom Dillehay (Vanderbilt University) and Michael Glascock (University of Missouri Research Reactor)

[57] *Recruited or Annexed Lineages: A Chemical Analysis of Purén and Lumaco Pottery and Clays*

The Purén-Lumaco Project conducted an archaeological survey of the Purén and Lumaco Valley in Chile (approximately 30 km) from 1994–2004. During the survey, Dillehay and colleagues noted 300+ prehistoric and historic localities that ranged from agricultural features to multifunctional mounds. Those archaeological features represent an Araucanian polity dating to the Early Prehistoric (A.D. 500–1550) and early Hispanic (A.D. 1550–1700) periods. The chiefdom-level polity was strong politically and economically, while experiencing demographic changes that ultimately resulted in a central force of resistance against the Spanish. One goal of the Purén-Lumaco Project was to use ceramic analysis to better grasp the strategies used to establish and maintain Araucanian dominance in the area as well as the presence of recruited or annexed lineages. If these Araucanians were recruiting distant groups into their lineage, non-local ceramics and a greater variability in the ceramic assemblage should occur. On the other hand, if neighboring lineages were annexed, one would expect Purén-Lumaco wares to be present at archaeological sites in the annexed areas, less local ceramic variability, and the introduction of a few Purén-Lumaco wares. A chemical analysis of pottery (n=259) and clay samples (n=78) addressed the degree of variability present in the ceramic assemblage.

Cecil, Leslie [291] see South, Katherine

Cegielski, Wendy [4] see Rogers, J. Daniel

Cegielski, Wendy (Arizona State University)

[72] *Networks of Social Stability in the Mediterranean Bronze Age*

Certain social systems do not become more complex. They remain stable for considerable periods of time despite constant environmental and cultural change, a fact that remains a puzzle in archaeology. Research by Iberian archaeologists indicates that the Valencian Bronze Age in Mediterranean Spain may be such a case where material homogeneity represents a social system lasting with little change for nearly 700 years (B.C. 2200–1500). This trend

stands in stark contrast to the complex social changes noted for its southern, contemporaneous neighboring region—the Argaric. Moreover, several archaeologists have proposed that the types and scales of social networks that a society exhibits have a profound influence on changes in social complexity. Thus, this study presents the preliminary results of the use of Network Science to explore both spatial and social explanatory mechanisms for the apparent social stability of the Valencian Bronze Age.

Celhar, Martina [189] see Zaro, Gregory

Cercone, Ashley (University at Buffalo (SUNY Buffalo)) and Mark Golitko (The Field Museum of Natural History; University of)

[149] *Ceramics Production and Trade Across the Great Hungarian Plain: Chemical Analysis of Bronze Age Ceramics from Békés 103 in Eastern Hungary*

The Bronze Age in Europe is noted for an increase in foreign interaction and trade, yet some areas show few signs of receiving non-local goods. Using chemical analysis of Bronze Age ceramic pastes from the cemetery of Békés 103 and nearby clay sources, this poster seeks to investigate trade networks and exchange between the people of the site and other areas of the Great Hungarian Plain. Using LA-ICP-MS, we examine the extent of trade and the degree to which the community participated in the exchange of goods compared to other areas of the Great Hungarian Plain. Combining new data with information from previously excavated ceramics, this project further explores the movement of ceramics on the Great Hungarian Plain by examining whether or not there are differences between graves in terms of acquisition and use of local versus non-local ceramics.

Cerezo-Román, Jessica (Harvard University)

[215] *Bodies among Fragments: Non-Normative Inhumations among the Preclassic and Classic Period Hohokam in the Tucson Basin*

Inhumation and cremation usually are studied in isolation regardless of the fact that they may be practiced in the same culture and time period. Among the Tucson Basin Hohokam in the Prehispanic American southwest, cremation was the main funeral custom and normative and non-normative inhumations were practiced with very low frequencies throughout the Preclassic (A.D. 700–1150) and Classic (A.D. 1150–1450/1500) periods. This paper explores changes through time in non-normative burial customs of inhumation from ten Tucson Basin (Arizona) Hohokam archaeological sites. This is done by exploring both biological reconstruction of bodies and posthumous treatments within and between sites. Inhumations are contrasted with cremations to explore how they are related but also distinct practices of remembrance. It is argued that critical and contextualized approaches to the study of non-normative burials are necessary in order to reconstruct the complexity of funeral customs and their associated cultural significance through time. The results provide a glimpse of social variation and multiple social groups within the Tucson Basin Hohokam sites.

Cervantes, Gabriela (University of Pittsburgh) and Robyn Cutright (Centre College)

[102] *Coastal Politics in Cajamarca: Recent Research in the Middle Jequetepeque Valley*

Based on research at Ventanillas, a Late Intermediate Period community in the middle Jequetepeque Valley, Peru, this paper discusses the role of coastal politics and highland influence in a multiethnic middle valley context. Mapping, surface collection, and excavations in 2011 and 2013 focused on investigating the cultural and political affiliation of Ventanillas residents. Ventanillas' imposing adobe platform mounds link the site visibly to coastal traditions; however, households used a mix of coastal and middle-valley utilitarian ceramics, spindle whorls, and food. We propose that Ventanillas residents incorporated highland and coastal traditions into a distinct chaupiyunga identity, while negotiating their political affiliation with expanding coastal Lambayeque and Chimú politics centered in the lower valley.

Chacaltana, Sofia (University of Illinois at Chicago)

[219] *Colonial Enclaves of Coastal Colesuyo during the Inca Influence*

How were small communities of coastal Colesuyo transformed under Inca authority? What roles were played by local and regional elites? Previous work conducted at the coastal site of Tacahuay has suggested that this site was an altiplano enclave controlled by more powerful Lupaca group. This enclave was established with the aim of obtaining coastal products, and in return Tacahuay elites would have access to Inca sumptuary goods. In this session I present different lines of analyses for future work that will be conducted at Tacahuay with the focus of responding: How were altiplano enclaves established at the coast? Were family ties established by intermarriage relations between altiplano lineages and coastal elites? How does the economy of a coastal enclave permit us to observe economies as complex webs of interactions with the altiplano, Inca, and local communities?

Chacaltana Cortez, Sofia [219] see Wackett, Joshua

Chacon, Enrique [168] see Sandoval, Cindy

Chacón, M. Gema [278] see Rosell, Jordi

Chadwick, Bill [208] see Neusius, Phillip

Chakraborty, Kalyan (University of Toronto)

[149] *A Virtual Documentation of Excavation through 3D Modeling: Is it Worth the Effort?*

Illustration of various means has always helped in visualising complex information, and archaeologists have used means such as photographs, drawings, and even three-dimensional illustration to present complex archaeological data. Archaeologists began using three-dimensional models of various archaeological monuments only in the 1990s. However, in recent years, and with high-end computer applications, archaeologists are able to document different stages of excavations using 3D illustration, which has the potential to better compensate for the irreversible and destructive nature of archaeological excavation. I used Agisoft Photoscan Pro to build 3D models of different levels of stratigraphic excavation to map the spatial distribution of archaeological finds from the cemetery site of Békés 103 in Hungary. Here, I address how these models provide additional information on various anthropogenic processes affecting the preservation of the archaeological record. I also report on how these models can be used to visualise the relationships between urns excavated in different years. Finally, I argue how this combination of information can be used to develop superior interpretations

of the archaeological record, justifying the additional time spent in documentation.

Chalfant, Jack [29] see Geiger, Crystal

Chamberlain, Andrew [183] see Harvey, Virginia

Chambers, Jason (SWCA)

[115] *Lindenmeier Redux: Spatial Patterns of the Lindenmeier Folsom Site (5LR13)*
The Lindenmeier Folsom Site (5LR13) was excavated from 1934–1940 by Frank H.H. Roberts, Jr. of the Smithsonian Institution. Over the course of six field seasons spent excavating the site, the spatial locations of approximately 6,000 items were mapped and recorded by Roberts, and later published as a series of maps in the appendices in the Concluding Report. These maps have been digitally reproduced using ArcGIS mapping software, preserving the spatial relationships between the artifacts mapped during the 1930s excavations, and sophisticated spatial analyses have been applied to the resultant Lindenmeier dataset to detect spatial patterning. Among other conclusions, the spatial patterns at Lindenmeier vary across the site, reflecting differential discard patterns enacted by the Folsom camp site occupants. These spatial patterns suggest an integrated suite of activities, including hideworking and projectile manufacture, undertaken across the site with logical segmentation of space and association of tools into specific toolkits. This presentation highlights some of the spatial patterns exhibited at the site. Examining spatial patterns within the distribution of discarded items at the Lindenmeier Folsom site will contribute greatly to enhancing archaeologists' interpretations of Paleoindian, and specifically Folsom, lifeways on the Great Plains during the Late Pleistocene.

Champion, Louis [177] see Winchell, Frank

Chamussy, Vincent [45] see Espinosa, Alicia

Chase, Arlen [26] see Chase, Diane

Chase, Diane (University of Central Florida) and Arlen Chase (University of Central Florida)

[26] *The Economic Landscape of Caracol, Belize*
The economies of the ancient Maya did not exist in vacuums; rather, they were interconnected to each other. This paper details the way in which one of these economies functioned during the Late Classic Period (A.D. 550–900). Archaeological research at Caracol, Belize, has been able to reconstruct how ancient Maya production and exchange systems were functioning within a large metropolitan area that serviced over 100,000 people. The population of Caracol maintained agricultural self-sufficiency on the residential level and produced a wide variety of crafts in their households for trade and exchange. Many quotidian goods were imported into the city for distribution, as were items of higher value. Specific exchange areas, in the form of formal plazas, were established to administer the distribution and exchange of goods. These plaza areas were also likely the locations for other administrative services. These physical locales were managed by local elites who in turn had central oversight. The transactions that occurred in these plazas not only served local inhabitants but also presumably resulted in the collection of taxes on the goods and services being traded, thereby bolstering the local and site center's elite.

[171] *Discussant*

Chase, Zachary (The University of Chicago and Brigham Young University) and Zach Chase (The University of Chicago and Brigham Young University)

[99] *Reconstructing Andean Pasts: Archaeology, Biology, or Ethnohistory? All of the Above, Please*

Over the last several decades, Andean archaeology of the late prehispanic through early Spanish colonial periods has grown to the point that critical reassessments of ethnohistorical materials and the anthropological models constructed from them are not only possible but necessary.

Taking as a premise that language and material culture are primary transmissions of cultural life through time, this presentation summarizes recent archaeological research in Cuzco, Huamachuco, Pachacamac, and highlands Huarochiri—all centers of mytho-historical materials central to scholarly reconstructions of the Andean past. I explore the implications of the results of this recent archaeology for our interpretations of early Colonial ethnohistory. In cases of apparent or obvious contradiction, use of archaeological data to reevaluate rather than reject information from colonial documents leads to greater understanding of late prehispanic Andean culture and life.

The realities of Quechua words/concepts like pacha, huaca, llacta, callpa, are amenable to archaeological analysis; examination of their concrete historical instantiations can nuance definitions of these concepts even as our understanding of the concepts can produce new archaeological data. The idea is to envision approaches that retain the analytical—even objective—vantage point provided by archaeology while also always working towards reconstructing perceptive and effective realities in the Andean past.

Chase, Adrian (Arizona State University)

[262] *Heterarchical Entanglement: The Complexity of Maya Water Management*

Many large cities of the ancient Maya, occupied in the Classic Period from 300 to 900 C.E., had limited or no access to permanent bodies of water. Instead, these low-density urban centers focused on harnessing the full extent of the seasonal rainfall their tropical environment provided. Previous research has highlighted the complex water management practices of the ancient Maya through their built environment and the sequestration of water into reservoirs (constructed feature sealed with clay or lime-plaster) and agaudas (naturally occurring water storage features). Based primarily on the prevalence, scale, and grandeur of large monumental reservoirs in city centers, the literature on water management has been dominated by top-down models of water control; however, many smaller household reservoirs have also been identified. Comparative archaeological research in other tropical areas highlights the existence of both top-down and bottom-up water control systems that worked in tandem. The ancient Maya also employed a

substantial bottom-up model of complex water management. This paper examines first how this bottom-up system helped support sizeable ancient Maya populations in locations where a modern city would require drastic and costly hydrological engineering efforts, and second, how water management affected the trajectory of many Classic Maya states.

[158] *Discussant*

Chase, Arlen (University of Central Florida) and Diane Chase (University of Central Florida)

[162] *Comparing Ancient Human-Nature Relationships at Tikal, Guatemala and Caracol, Belize*

Gordon Willey wrote about the importance of settlement patterns, focusing on the ways that humans distributed themselves over the landscape. While his and other early researchers' efforts incorporated built features, they did not really research or assess the impact of the human-nature relationship within a given landscape. Vern Scarborough's work has helped to fill in this gap in the Maya area, particularly relating to Tikal, Guatemala and to northern Belize. This paper builds on Scarborough's examination of water systems at Tikal by comparing and contrasting the human-nature relationships at Tikal with those at Caracol, Belize. These two sites had a tangled archaeological history, but each exhibits distinct adaptations to their particular landscapes. An examination of the landscape and archaeologically-recorded differences between the two cities helps to better contextualize their interactions during the Classic Period (A.D. 250–900) and importantly highlights the diverse ways in which the ancient Maya were shaped by—and shaped—their human-nature relationships.

[262] *Discussant*

Chatelain, David (Tulane University)

[88] *Political Dynamics in the Northwestern Petén from the Preclassic to the Classic: The View from La Cariba, Guatemala*

La Cariba was a relatively small minor center in the northwestern Petén, but was situated in an area of important political dynamics with far-reaching consequences in the Maya world. During the Late Preclassic, the region may have been heavily influenced by El Mirador. Eventually, during the Late Classic, the nearby center of La Corona became a strong ally and vassal of the Kaan Dynasty at Dzibanche and later Calakmul. Formal investigations at La Cariba since 2012 have revealed that La Cariba transitioned from an active center during the Late Preclassic to a close ally or administrative center of La Corona during the Late Classic. The data from La Cariba, incorporating architecture, ceramics, lithics, obsidian, epigraphy, and iconography, contribute to our understanding of the history of this region. By focusing our attention on smaller peripheral sites, we can understand the strategies of rulers of sites such as La Corona in incorporating and maintaining control over their peripheries. In particular, La Cariba shows how the political strategies practiced by the earlier Kaan Dynasty were adopted at a smaller scale, and with only brief success, by the later La Corona lords.

Chatters, James (Applied Paleoscience)

[21] *Making Sense of Kennewick Man*

For almost 20 years, the >9,000 year-old skeleton known as Kennewick Man has been the subject of rumor, media hyperbole, lawsuit, political posturing, and even some good science. Archaeological, osteological, morphometric, stable-isotope, chronometric, and genetic studies have now been completed and reported and more than 50 scholars have presented their findings in internet publications, journals, and books. Widely divergent claims have been made about this man's heritage and place of origin. He has been variously characterized as an early European who arrived before Native Americans, a wandering Ainu trader who lived on seals, and a direct ancestor of a single member of the Colville Tribe. All of these claims are colored by politics; none is securely founded in scientific fact. This paper will summarize what is known, critically assess what has been reported, and discuss Kennewick Man's appropriate place in the archaeological and paleoanthropological story of the Americas.

Chavez, Christina [66] see Kerr, R. Stanley

Chavez, Christina (Marron and Associates), Charles Frederick (Consulting Geoarchaeologist, Dublin, Texas) and Arlo McKee (Consulting Geoarchaeologist, Richardson, Texas)

[168] *Analysis and 3D Modeling of Pithouse Architecture during the Developmental-to-Coalition period Transition in the Albuquerque Basin*

Recent archaeological investigations at LA 151618 on the west side of Albuquerque exposed an extensive residential site dating to the late Developmental-to-Coalition period transition. The site contains a wide range of subterranean architectural features, including three pithouse structures, and three storage pits/middens, some of surprising depth. In partnership with Charles Frederick, consulting geoarchaeologist, Dublin, Texas, and Arlo McKee, consulting geoarchaeologist, Richardson, Texas, two features were modeled using Agisoft Photoscan to produce a scaled 3D model, DEM, and orthophoto. Through comparison with features from contemporaneous sites in the region, the results of these analyses have implications for social developments occurring in the Middle Rio Grande Valley during the twelfth and thirteenth centuries.

Chechushkov, Igor (University of Pittsburgh)

[143] *Age of Heroes: Elite Warfare during the Eurasian Bronze Age*

The Eurasian Bronze Age has been in focus of archaeologists, historians, and linguists at least for last 50 years for the rich and striking records of Indo-European origin and movements. Important topics strongly attached to this theme are horse utilization and emergence of battle chariot. However, previously they have not been analyzed statistically and rarely treated from the positions of anthropological archaeology. This paper examines the modern level of knowledge of archaeological records through their quantitative analysis, results of experimental tests, and re-examination of chronology in light of radiocarbon dates. One of the results is an attempt to show that during the Bronze Age, warfare caused emergence of social complexity and shaped it by producing military professional class of elites, later reflected in such written sources as Rig Veda, and yet elites in order to preserve their social privileges kept to create necessity of warfare and required means. This military class was directly involved to warfare; however, due the examinations of archaeological records, it is not seen as the endemic wars, but as rare "elites"-related events.

Cheetham, David [236] see Renon, Virginie

Chen, Peiyu (University of Pittsburgh)

[31] *Household Practice and Early Forms of Social Inequality in Huaca Negra, Viru Valley*

This research attempts to understand daily household practice in Huaca Negra, a coastal site that was occupied from 5,000 to 3,000 B.P. in the Viru Valley, to answer two interrelated research questions: (1) Were there signs of institutionalized social inequality represented at the household level in Huaca Negra during its occupation? (2) If so, through what kinds of daily household practices did potential leaders in this particular community differentiate themselves from others? Alternatively, through what kind of practice was social equality maintained?

Previous excavation in 1946 by the Viru Valley project revealed the domestic nature of Huaca Negra. Data from 2014 survey and the excavations in the 2015 field season will be presented and be used to examine synchronic intra-community household inequality and its long-term diachronic change. Three lines of evidence: subsistence resources, craft goods, and exotic/prestige material imply differential access to natural resources, wealth accumulation, and extra-local social networks, and they constitute different facets of economic activities as indexes of social inequality.

Chen, Maa-Ling [106] see Wu, Mu-Chun

Chen, Xiao (University of British Columbia), Steffan Gordon (University of British Columbia) and Zhuo Sun (Wuhan University)

[173] *Palaces and Power in Early China: Comparative Analysis between Shang and Zhou Elite Courtyard Complexes*

The courtyard building, enclosed by walls or corridors, was a typical architectural pattern in ancient East Asia. According to archaeological excavations, such as in the Yanshi and Huanbei Shang city sites, and the Zhouyuan Zhou capital site, this pattern emerged early in China, before the emergence of Qin-Han Empires (ca. 221 B.C.E. to 200 C.E.), and then was used widely in high-class buildings such as palaces and ancestral temples. Comparison of the high-class courtyard buildings of the Shang and Zhou periods suggests that the size and proportion of courtyard space decreased, while the interior space of the main hall and length of the north-south axis increased, the surrounding corridors disappeared, a fixed U-shape pathway connecting the entrance and main halls appeared, and sacrificial remains moved from south of the main hall to north. These variations of the fixed- and semifixed-feature elements suggest a concurrent change in the nonfixed-feature elements, the people involved, such as their numbers, relationships, and the types of activities, meetings, or rituals they engaged in within these structures. Space syntax analysis helps to show how these changes in the built environment facilitate changes in strategies for the establishment, transmission, and inheritance of power in early China.

Chenault, Mark

[53] *Technical Analysis of Hohokam Stone Palettes from Pueblo Grande Museum*

In a graduate seminar on flaked and ground stone analysis, Payson Sheets emphasized the importance of experimental replication of production techniques for lithic analysis. In this study, I build upon the work of another of Payson's students, Devin White, who analyzed Hohokam palettes in the collections at Arizona State Museum in Tucson, and apply his methods to the analysis of palettes at Pueblo Grande Museum in Phoenix. In addition, I attempt to replicate some of the techniques used in the production of palettes to determine the steps involved in creating the objects and some of their common design elements. I also examine the palettes under magnification to search for remnants of painted designs on the borders, a decorative technique that might have been more common than once thought, but was rarely preserved.

Cheng, Chieh-fu Jeff (Boston University)

[106] *An Archaeological Study of Landscape, People, and Mobility in the Lakulaku River Basin in Eastern Taiwan from the 18th Century to the Present*

This research explores the historical development in the Lakulaku River Basin in the eastern section of Yushan National Park in Taiwan from the eighteenth century to the present through a landscape archaeological perspective. The Lakulaku River area has a complex history. Indigenous Bunun group, Qing Empire from China, and Japanese colonial government had once occupied this region, leaving the traces of human activities that change the natural landscape. This research analyzes these traces of human activity from the past to the present, such as trails, abandoned villages and police stations, and facilities of the national park, discussing how landscape has been manipulated by different groups of people due to the changing relationships among them through time.

[106] *Chair*

Cheng, Wen Yin (Elaine) (University of Toronto)

[180] *Raw Material Sources of Bronze Vessel Production during the Shang and Zhou Dynasties*

Bronze vessels of the Shang and Zhou dynasties were extensively studied artefacts, but how were they related to the ancient geographical landscape? By understanding how extensive the industry was and how far it had impacted the landscape, we could further our knowledge on the ancient Shang and Zhou bronze casters as well as society. Bronze vessels required a variety of raw materials for its production. By looking at the ancient mines to produce bronze and the clay resources for the bronze moulds, a map of the ancient bronze casting industry may be seen, giving us a better understanding of their relationship to the landscape and how these relationships may have continued or changed between the Shang and Zhou dynasties.

Chenvert, ErinMarie, John Davis (Central Washington University), Ian Buvit (Central Washington University), Alexis Dyson (Central Washington University) and Jillian Hendrix (Central Washington University)

[120] *Comparing Methods for Determining Particle-Size Distribution*

Particle size analysis can be time consuming and expensive. Effective time and money management have the potential to contribute to more accurate particle size analysis results. Here, we compare various pretreatment procedures to determine which is more efficient. Coarse-fraction was determined for nine sediment samples by sifting through nested sieves with standard mesh sizes #5, #10, #35, and #60 to compare wet-screening to mechanical dry-screening. Carbon was then removed from the smaller than #60 sub-sample by combustion, and fine-fraction was then calculated using laser diffraction. Results show that there is no significant difference between the wet and dry screening. These results suggest that whichever method is more advantageous financially would be the best choice of particle-size analysis.

Cheong, Kong (American University), Mads Jorgensen (University College London) and Roger Blench (Kay Williamson Educational Foundation)

[46] *Shake It Off: The Ancient Sound of Ceramic Vessel Rattles (Maracas) from Tala and Teuchitlan, Jalisco, West Mexico*

In the past 60 years, the presence of musical instruments, musicians, and dancing in West Mexican art has been frequently discussed but largely unanalyzed, limited to comparison and contextualization of individual pieces, or occasional mention tangentially as part of some other narrative. The

cursory treatment of this class of material has resulted in many unanswered questions: Who, for example, made these instruments? Who played them? How were they made? How and when were they used? What do they sound like? What did they mean to the people who used them? In order to answer these questions, we must further our understanding of the instruments themselves. In this paper, we will present our study on vessel rattles, or maracas. Vessel rattles are one of the true indigenous instruments of the Americas. They are almost always associated with rituals, as evident in iconography and ethnographic records. Seven ceramic vessel rattles from a private collection in Jalisco, ranging from the common gourd shaped to zoomorphic and anthropomorphic, are presented. Insights into the possible usage and meaning of these instruments and their organology are discussed as an analysis of ancient West Mexican musical culture.

[46] Chair

Cherkinsky, Alex [39] see Loftis, Kathy

Cherry, John (Brown University) and Thomas Leppard (Rutgers University)

[296] *Re-assessing Island Colonization and Exploitation in the Late Pleistocene-Early Holocene Mediterranean*

In 1981, one of us (Cherry) first attempted to tease out spatial and temporal patterning in the colonization of the Mediterranean islands by human communities. Since the 1980s, slowly accumulating evidence has suggested that the Mediterranean islands were sporadically exploited by hunter-gatherer-fishers (HGF) during the Epipalaeolithic and Mesolithic. Here, adapting principles from island biogeography, we seek to establish whether or not these patchy data exhibit patterning. We suggest that the non-permanent exploitation of larger and ecologically-robust islands (such as Crete and Sardinia) indicates that, while humans were clearly capable of reaching the Mediterranean islands prior to the Neolithic, their general reluctance to do so can be explained in terms of the variable environmental attractiveness of the insular Mediterranean. Tending to be relatively small, dry, and biologically depauperate, the Mediterranean islands were largely inhospitable to mobile HGF groups requiring extensive territories with diverse and robust biotas. Sedentism only became a widely viable strategy in the insular Mediterranean with the development in the Neolithic of what we might regard as 'terraforming'—that is, the introduction of cereals, pulses, and ovicaprids, all tolerant of xeric environments.

Chesson, Meredith [171] see Ames, Nicholas

Chhay, Rachna [262] see Carter, Alison

Chiang, Chihhua (Department of Anthropology, National Taiwan University)

[180] *The Projectile Points at the Wansan site, Neolithic Taiwan*

Wansan site is one of the late Neolithic sites in Northeastern Taiwan. In 1998, due to construction, a large rescue excavation was conducted at the site and huge amounts of lithic and ceramic artifacts were uncovered. Among the lithic artifacts are finely ground tools, including projectile points, adzes, axes, knives, etc. This poster aims to analyze one specific tool: the projectile point. Three parts of analysis are demonstrated in this poster. First, I will introduce the projectile points uncovered from that excavation, including the types, raw materials, and the distribution of these projectile points. Then, I will examine the broken pattern of these projectile points spatially. In the end, I will investigate the rich ethnographic data in Taiwan to discuss the functions of the projectile points in traditional indigenous societies. In conclusion, I will try to infer how Neolithic Wansan people might use these projectile points and the possible meaning of these different projectile points.

Chiarulli, Beverly (Indiana University of Pennsylvania)

[153] *An Analysis of the use of Quarries and Workshops by Late Prehistoric People in Western Pennsylvania*

During the Late Prehistoric Period in the central Allegheny Valley of Western Pennsylvania, at least four major lithic raw material types were used for the manufacture of a limited variety of tool types. The major tool forms were small triangular projectile points and flake tools. The major raw material types used in this region include Onondaga, Loyalhanna, and Shriver cherts and Vanport Siliceous Shale. Workshops and quarries have been identified for these materials and are found on the north, south, east, and west sides of this region. An analysis of the lithic assemblages from several villages investigated by our field schools and other projects has found that these raw materials were used throughout the area. Additional investigation of the raw materials used in the villages suggests that although the frequency of raw materials used in any particular village generally reflects the distance to sources, there are some materials that are present in greater than expected quantities. While there is no expectation that native groups in western Pennsylvania were transporting the quarry products in great quantities, it is possible that some raw materials could have been moved either overland or through canoe transport on the regional rivers.

Chiatti, Lawrence

[226] *Boxes and Boxes of Guilt: Guilt Mail from the Canyon de Chelly National Monument*

Within the collections housed at the Canyon de Chelly National Monument there are many archaeological artifacts and natural resource materials which were taken and subsequently returned by visitors to the park, along with associated letters and correspondence. While the existence of these returned unauthorized collections, also known as "Guilt Mail," is not common knowledge among the general public or park visitors, many national parks have similar items in their collections.

Within the National Park Service, comprehensive guidelines regarding management, recording, and cataloging returned unauthorized collections are nonexistent. Also, detailed or even large scale studies of these returned artifacts and associated letters are embryonic at best.

This study will focus on the kinds of materials taken, when the thefts occurred and when the items were returned, and the procedures and practices that the national parks follow in cataloging guilt mail. Artifacts and letters from the Canyon de Chelly are the prime focus of this study, but other southwestern parks and their collections are referenced.

Chickanis, Caius and Monica Brisenio

[93] *Developing a New Methodology for Sourcing Calcite and Quartz Crystals*

Quartz and calcite crystals are used by shamans throughout Mesoamerica for divination. Ethnographic accounts mention shamans who, lacking actual crystals, use pieces of broken glass. This suggests that crystals may not occur in all areas so that crystals could have been actively traded in precolumbian times. Testing this hypothesis requires developing a methodology for sourcing quartz and calcite crystals using trace elements incorporated into the crystal matrix during growth. So far as we know, this has not been previously attempted. This paper presents the results of tests using a number of sourcing techniques run on crystals recovered riverine sands in the Cueva de Río Murciélagos, Dos Pilas against crystals from other areas. We hope to apply this methodology to the Maya area.

Chicoine, David [56] see Treloar, James

Chicoine, David (Louisiana State University)

[56] *Enchanted Plazas: Monumental Art and Iconography in Early Horizon Coastal Ancash*

This paper considers the spatial design of ritual gathering places and the iconographic content of associated sculpted friezes at Early Horizon centers in Nepeña, coastal Ancash, Peru. The Early Horizon marked a transition from representational art of the late Initial Period to abstract forms of public visual arts during the second half of the first millennium B.C. This paper examines the context of the public visual arts within enclosed compounds—hypothesized as multi-functional residences—and evaluates their role in shaping social interactions during the Early Horizon. I argue that the visual and aesthetic properties of the public art “enchanted” visitors and rendered semi-public plazas “magical” to the gaze of outsiders. The shift from late Initial Period to Early Horizon iconographies marked both a democratization of religious practices and a revival of natural, animistic forces as powerful agents of social reproduction. It is argued that abstract visual arts have the capacity to associate human ritual actions with powerful natural and supernatural agents. This represents a radical shift from the therianthrope forms of Chavín, Cupisnique, and Sechin arts.

[56] *Chair*

Chiewphasa, Ben [175] see Law, Karly

Childs, Terry (Department of the Interior)

[202] *Discussant*

Chilton, Elizabeth [10] see Battle-Baptiste, Whitney

Chinchilla, Oswaldo (Yale University)

[58] *Public or Private? Archaeology in Modern Guatemalan Museums*

Recent decades have witnessed a veritable explosion in the number of museums in Guatemala. Most of the new museums are small, focused on specific collections or sites. Some emerged from governmental initiatives, but many are private endeavors. In this paper, I trace the historical development of museums, going back to earlier, nineteenth and early twentieth-century precedents. I also offer comments on modern Guatemalan museums, including questions of institutional development, funding, collections management, and preservation, and public outreach at the national and international levels.

Chinique De Armas, Yadira (Department of Anthropology, University of Winnipeg), William Mark Buhay (Department of Anthropology, University of Winnipeg), Roberto Rodríguez Suárez (Anthropological Montane Museum, University of Hava), David Smith (Department of Anthropology, University of Toronto) and Mirjana Rokсандić (Department of Anthropology, University of Winnipeg)

[220] *Subsistence Strategies and Food Consumption Patterns of “Fisher-Gatherer” Populations from Western Cuba: From Traditional Perspectives to Current Analytical Results*

Starch and isotopic analyses have changed our understanding of subsistence strategies and food consumption patterns of Cuban “fisher-gatherers,” traditionally considered as populations who depended on natural resources, without management of cultigens. Isotopes (^{13}C and ^{15}N) from Guayabo Blanco, Cueva del Perico, Cueva Calero, and Canimar Abajo (CA) sites, indicated two different food consumption patterns among coexistent “fisher-gatherers,” suggesting that populations with different dietary traditions co-existed in Cuba. At the site of CA, we identified beans and maize and/or sweet potato starches. While CA individuals depended on marine resources and C3/C4 plants, the others relied mostly on terrestrial sources and C3 plants. Our findings do not support the traditional evolutionary model that stated a unilinear transition from “fisher-gatherer” towards agriculturalist, as older CA individuals managed plants 1,000 years earlier than people from the other sites. This also confirmed that cultigens were used before Agriculturalist expansion into the island.

Chiou, Katherine (University of California, Berkeley)

[122] *Common Meals, Noble Feasts: An Archaeological Investigation of Moche Food and Cuisine in the Jequetepeque Valley, Peru*

In the North Coast of Peru, relatively little is known about the majority of the population that supported the lifestyles of the elite. In this paper, I discuss the concept of a Moche cuisine through a study of the foodways of both elite and commoner classes, drawing on archaeobotanical data from a feasting preparation area located in the elite cemetery of San José de Moro and from a humble household situated near the base of the fortified hilltop settlement of Cerro Chépén. Cuisine can be interpreted as much more than a set of cooking traditions that define a group or groups of people through space and time. It is a cultural construct that incorporates the meanings surrounding the ingredients, the preparation, cooking, and combination of flavors, and the when, where, why, and how of eating, linking foods with a way of life; in essence, cuisine is what sets one culture apart from another and provides a common understanding of what it means to belong to a community. By conceptualizing the common, everyday meal and contrasting it with the opposite extreme—the feast—I examine how food might have played a central role in the creation and negotiation of Moche identity.

[122] *Chair*

Chiou, Katherine L. [122] see Kennedy, Sarah

Chiquito Cortés, Erik (UNAM)

[136] *Una propuesta de estilo entorno a la pintura mural de Ixcaixtla, Puebla.*

Con el hallazgo fortuito de una cámara mortuoria en Ixcaixtla, Puebla (dentro de la mixteca). se pudieron registrar un conjunto de pinturas murales que hasta la fecha son únicas en la región.

A pesar de contar ya con once años de haber sido descubiertas, los trabajos entorno a la pintura mural son escasos y los existentes se centran en determinar su contenido iconográfico.

Con base en la anterior, nuestra presentación reflexiona y busca dar una propuesta estilística sobre la pintura mural, considerando los factores culturales (internos y externos) que desarrolla e influyen a la pintura, a su vez se tomará en cuenta el periodo histórico (epiclásico) en el que se elabora dicha obra y el mismo contexto arqueológico.

Chiriboga, Carlos [138] see Freidel, David

Chirikure, Shadreck (Department of Archaeology, University of Cape Town, South Africa) and Abigail Joy Moffett (Department of Archaeology, University of Cape Town)

[107] *Fluid Spaces and Fluid Objects: Nocturnal Material Culture in Sub-Saharan Africa with Special Reference to southern Africa*

The transition of time from day into night is a fundamental pivot through which human existence revolves. And yet, as if 'afraid of the dark', few archaeological reconstructions have attempted to explore nightly practices. In the anthropology of southern Africa, particularly amongst groups such as the Shona, the dawn of the night opened the door to a host of nocturnal activities, which included learning, reproduction, relaxation, and ritual. For example, witches used mundane winnowing baskets as transport while they placed quotidian pestles adjacent to their partners as decoys to prevent them from noticing their absence during nocturnal expeditions. Given that houses and material culture used during the Iron Age (C.E. 200–1900) of southern Africa often closely resemble that used in some contexts, it is possible, within limitations, to delineate nocturnal activities. We fuse a rich body of anthropological knowledge, supplemented by participation in Shona society to explore nocturnal activities in an archaeological context. Interestingly, objects such as glass beads, often celebrated as symbols of prestige by archaeologists, were used to enhance sexual pleasure at night. The use of spaces and objects was fluid between day and night such that archaeological interpretation should be alert to multiple possibilities.

Chirinos Ogata, Patricia (University of California, Santa Barbara)

[102] *Wari Imperial Presence in Cajamarca: A View from Yamobamba*

The Wari empire built at least two main centers in the Cajamarca region as part of its expansion to different regions of the Central Andes. One of them, Yamobamba, 25 km southeast on the road to Huamachuco, presents an architectural pattern that corresponds to Wari canons, including square patios, narrow corridors, and peripheral galleries. In particular, its distribution, size, and orientation show a strong resemblance to Jincamocco (Ayacucho), almost 900 km away.

Recent research at Yamobamba confirmed the layout and distribution of most of the preserved structures, and defined a room at the center of the site that probably served as a point of access to the subdivided half of the enclosure. However, the associated materials suggest that while the site was built during the Middle Horizon, it was only briefly occupied. This paper presents the results of two seasons of work at Yamobamba, and examines its place in the imperial network, considering its architectural features, location, and evidence of activities.

[102] *Chair*

Chisholm, Linda (Katmai National Park & Preserve), Thomas M. Urban (Cornell University), Robert W. Jacob (Bucknell University), Dale Vinson (Katmai National Park & Preserve) and Jillian Richie (Gates of the Arctic National Park & Preserve)

[148] *Geophysical Survey Meets Cultural Resource Management at Brooks River NHL*

The Brooks River Archaeological District National Historic Landmark (XMK-050) in Katmai National Park, Alaska, includes sites that date from 2500 B.C. to the historic period—a cultural record that spans nearly 4,500 years. While this district has already yielded data of great scientific importance—including the greatest concentration of Arctic Small Tool tradition dwelling sites in Alaska, and possibly in North America—it is suspected that as much as 90 percent of the cultural resources remain undisturbed and untested. These resources are presently under threat from both erosion and the ongoing need to maintain infrastructure at the visitor camp. In 2015 our team conducted extensive geophysical surveying of highly-impacted areas using ground-penetrating radar (GPR), magnetometry, and electromagnetic induction (EM). The surveys located a number of previously unknown archaeological features and gathered new information on some known features. The highlights of this effort are presented.

Chiykowski, Tanya (Binghamton University)

[41] *Petrography, Pots and People: Determining the Source of Hohokam Plainwares at Cerro de Trincheras, Sonora, Mexico*

Late prehistoric Sonora, Mexico, was a dynamic landscape of warfare, mass migration, and trade networks spanning modern international borders. At around A.D. 1300, archaeologists have clear evidence of Hohokam populations moving from southern Arizona and displacing indigenous Trincheras populations in the Altar River Valley of Sonora. With a ceramic type called Sells Plain, Hohokam potters introduce a new ceramic manufacturing technology—paddle-and-anvil ceramics—to the region. In response to this migration, the indigenous Trincheras Tradition population built the site of Cerro de Trincheras 60 km away in the Middle Magdalena Valley. The presence of large quantities of Sells Plain ceramics at Cerro de Trincheras suggests that Trincheras and Hohokam populations interacted, but not how the process occurred, nor the impact those actions had. My research uses ceramic petrography and stylistic analysis to test for trade, community migration, and the movement of women. This poster presents the petrofacies model and its correspondence to sherds recovered from northern Sonora. My analysis shows that the predominant form of interaction between the two cultures were Hohokam women moving to the site, likely under coercion or violence.

Chmilar, Jennifer

[162] *A Flow of Ideas: Water Management from an Aguada and into Wetlands*

The approach taken by Vernon Scarborough to the study of water management in the Maya area has been a thorough investigation of the role of water in the formation of both the relationships of people with their environment, and also the impact of water in the organization of people among themselves. While I was a student of Vern Scarborough's from 2003 through 2005, he emphasized three key points in my thinking. The first is an openness to seek is a cross cultural analogy. Secondly, he stressed the depth of knowledge that people had of their environmental systems and how this knowledge may have been incorporated variously into economic, political, religious, and other organizational schemes. Finally, while adhering to the scientific method, Scarborough stressed the need for multi-disciplinary collaboration and a resulting interpretation that is both holistic and humanistic. The following presentation will draw from Scarborough's extensive body of work in the Maya area to demonstrate his impact not only on my work—while as a student of his working on an aguada in Belize and also subsequently while investigating ancient Maya use of wetlands in Quintana Roo, Mexico—but also comment on the legacy he has created.

Chovanec, Zuzana (University At Albany) and Sean Rafferty (University at Albany)

[189] *Detecting Olive Oil and Other Mediterranean Plant Oils: Experimental Considerations in Differentiating Lipids in Ancient Residues*

This paper presents an experimental research program that assesses the possibility of distinguishing olive oil from other oils derived from Mediterranean plants based on fatty acid profiles. Due to the olive's prolific use in the region, its oil is often presumed rather than demonstrated to be present in ancient residues. Other residue studies have suggested that different organic products may be differentiated based on specific ratios of fatty acid pairs. To evaluate this approach, a sample of Cypriot olive oil underwent an artificial aging study that modeled chemical alterations of fatty acids using gas chromatography/mass spectrometry (GC/MS). Fatty acid pairs that potentially could be used to differentiate olive oil from other plant oils were statistically determined. These results of the experimental study were compared to chemical data for other plants indigenous to the island of Cyprus and applied to a data set of archaeological samples that had undergone chemical analysis. The outcome suggests that the method described may be used to distinguish olive oil from other plant oils if a vessel was used exclusively for the storage of olive oil.

Christenson, Andrew (Smoki Museum of American Indian Art & Culture)

[258] *The Matthew Effect in Archaeology: Discovery, the Transmission of Knowledge, and Credit*

Although the Matthew Effect was originally used by sociologist Robert K. Merton for the disproportionate credit given to eminent scientists in cases of collaboration or independent discoveries within a professional discipline, it also is appropriate to apply it to situations where professionals take away or gain credit for work done by amateurs. Examples of such an effect are provided with an examination of the more general issue of how knowledge of discoveries is transmitted in archaeology and how outsiders are usually at a strong disadvantage over insiders in making their research known and in receiving credit for important contributions. This effect is further reinforced when it carries over into histories of archaeology that take the research activities of professionals to be their primary basis, leaving recognition of the important contributions of amateurs under- or un-represented.

[258] *Chair*

Christie, Jessica (East Carolina University) and Ivan Ghezzi (Yale University)

[233] *The Inka in Chankillo?*

The Inka used numerous strategies to expand and integrate a growing empire. We present a case of Inka mobilization of things and ideas, seeking to establish context, through the lenses of stone cults, wak'as, sun worship, and sukanas, for a unique fertility offering found far from the capital on a tower at the Chankillo site (400–200 B.C.) on the north-central coast.

The towers functioned as a solar observatory: sunrises and sunsets were tracked across the towers from two observation points. An Inka delegation traveling on the northern coastal road could have placed this offering at Chankillo. The similarities between its towers and the Inka sukanas have long been noted. Their form recalls vertical monoliths on mountaintops underneath which qhapaq ucha figurines were sometimes buried. Vertical stone wak'as with associated qhapaq ucha figurines in Inka contexts have been documented. Since there is no Inka occupation at Chankillo, this offering represents an act of Inka wak'a making at an important, early, and by then abandoned, site. The astronomical context and symbolism of this ritual performance indicate the Inka related the meaning of the Chankillo towers to their own worldview, and mobilized people and objects accordingly.

[233] *Chair*

Christine, Markussen [124] see Dolan, Patrick

Chunag, Amraturvshin [180] see Ciolek-Torello, Richard

Church, Robert [39] see Warren, Daniel

Church, Warren (Columbus State University, GA)

[102] *Beyond the Marañon: A Consideration of Cajamarca's Changing Relationships with Chachapoyas Societies*

This paper offers observations regarding the distribution of Cajamarca fine, painted kaolin-ware pottery recovered to the east, across the Marañon canyon in the Chachapoyas region cloud forests. Cajamarca's complex societies lay at the center of expansive interaction networks during prehispanic times. The clearest evidence of Cajamarca's long-distance communication networks consists of its signature fine, painted kaolin-ware bowls discovered in sacred and mortuary contexts across the central Andes, especially during the Middle Horizon. During the 1940s, the first chronological sequence was produced by Henri and Paulette Reichlen who documented the development of Cajamarca's kaolin fine-ware tradition that paralleled production of quotidian wares over two thousand years. The Reichlens were also among the first to cross the Marañon canyon to conduct systematic survey and excavations, and to note the distribution of Cajamarca kaolin wares extending eastward into the archaeological region of Chachapoyas. Chachapoyas archaeology is still underdeveloped, but Cajamarca kaolin bowls, and local imitations, are found at monumental sites and in local collections. Recently, excavated samples allow dating of interregional communication across the Marañon between Cajamarca and Chachapoyas to the first centuries B.C. Lacking trace-element studies, only tentative hypotheses regarding the sociopolitical and economic nature of this culture contact are offered.

Ciccone, Salvatore

[61] *Space and Architecture: Historical Archaeology at the Eastern Pequot reservation*

Prior to the devastating Pequot War of 1636, the Pequot people of modern day Connecticut were one unified nation. As a result of the conflict, there now exists two separate cultural groups, the Mashantucket Pequot and the Eastern Pequot. They experienced a trajectory throughout history that remained mostly parallel until modern times. My research examines some of their historic variations, particularly their architectural practices, and the timing of their transition to English-style framed houses. Much is already known about the Mashantucket transition, believed to have been complete by 1830; however, recent archaeological excavations at the Eastern Pequot Tribal Nation Reservation from the 2015, 2013, and 2011 field seasons have the potential to shine new light on to what degree their architecture stylistically and functionally changed throughout reservation occupation. Through a direct comparison of Eastern Pequot architectural materials to contemporary English ones, I seek to understand the negotiation of Euro-American and Indigenous concepts of space and architecture on the Eastern Pequot reservation.

Cicccone, Jay (Klyne Esopus Museum)

[274]

The Paleoindian Period at the Aldrich Island Site: A Multicomponent Paleoindian site in the Hudson River Valley

The Middle and Late Paleoindian Periods had formerly been close to absent from the literature of known Hudson Valley Paleoindian sites. This led some researchers to suggest that these cultures might have, to a larger degree, stayed away from this region as a whole. However, recent findings from the Aldrich Island Site demonstrate that the Hudson Valley of New York State was indeed inhabited and utilized by these cultures, and perhaps much more extensively than once previously thought. A wide range of Middle and Late Paleoindian projectile point typologies are present at Aldrich Island, along with all stages of preforms manufactured from a large high-grade lithic source very close to the site. Some of these typologies, before now, are not known from the northeast, where the "home" landscapes of these cultures are from far outside of this region. Highly exotic lithic materials, most of which from the Late Paleoindian portions of the collection, suggest that long distance travel just after the Younger Dryas might not have experienced as much of a constricted environment as once had been thought for the northeast during this time period.

Cienfuegos, Edith [20] see Casar, Isabel

Cinquino, Michael [131] see Hayward, Michele

Ciolek-Torello, Richard (Statistical Research, Inc.), Michael Heilen (Statistical Research, Inc.), Jeffrey Homburg (Statistical Research, Inc), Amraturvshin Chunag and Gunchinsuren Byambaa

[180]

Modeling Archaeological Site Location in Northern Mongolia: The Northern Railways Archaeological Project

Around the world, predictive models are increasingly important to heritage management by estimating where sites are likely to be located, particularly in un-surveyed areas. Northern Mongolia is well known for its archaeological resources, particularly Bronze Age and Early Iron Age sites, but vast areas remain to be surveyed. This poster presents a project conducted by the Mongolian International Heritage Team and Statistical Research to provide recommendations on the routing of a proposed Northern Rail Link between Murun and Erdenet, in northern Mongolia. The project involved several steps. First, a preliminary model of archaeological site location was created by regional experts using prior knowledge of the regional archaeological record and logical expectations regarding site location. The model was operationalized in a geographic information system and subsequently used to design sample survey within an area surrounding several proposed railway corridor alternatives. Survey results were then used to refine the model using advanced statistical methods, estimate the potential for impacts and heritage investigation costs along segments of the proposed railway, and recommend further work. The project proved to be a responsible and cost-effective approach to considering and protecting heritage resources of national and global significance in a remote and understudied region.

Cipolla, Craig (Royal Ontario Museum)

[18]

"Nothing but Wood and Stones": A Long-View Perspective on Human-Stone Relations in the Native Northeast

In 1762 Ezra Stiles—ethnohistoric observer and future president of Yale University—puzzled over the significance of brush and stone heaps constructed by indigenous people of New England. He found the label "sacrifice rocks" unfit for such features because indigenous people never killed animals or offered lives of any kind there. I begin this paper by addressing some of the challenges involved in interpreting eighteenth- and nineteenth-century indigenous spirituality and religion. I contextualize archaeological patterns from households, cemeteries, and landscapes in terms of their long-term histories, beginning with deeper eras of prehistory. I focus on the complicated relationship between humans and stones, tracing its development through time. I consider the ways in which ancient bodily practices and engagements with stone relate to the archaeological patterns we find in colonial contexts, suggesting that perhaps wood and stone were more person-like (even in Christian Indian worlds) than Ezra Stiles ever considered.

[18]

Chair

Clark, Jeffery [17] see Peeples, Matt

Clark, Geoffrey (Arizona State University)

[170]

Lithics, Landscapes & la Longue-Durée – Curation as an Expression of Forager Mobility

With the recognition that practically all archaeological sites are depositional composites unrelated to the activities of any contemporary group of individuals (i.e., palimpsests) and that forager adaptations are not 'site-specific' but rather landscape-scaled phenomena, statistical approaches designed to take these predicates into account have been developed over the past decade that depart from the traditional techno-typological systematics used for decades in much of Europe and the Levant. Based on artifact density and the frequency of retouched pieces scaled to the volume of sediment excavated in cave and rockshelter sites (Riel-Salvatore and Barton 2004), and the ratio of retouched artifacts to artifact totals scaled to unit area in surface sites (Miller and Barton 2008), they can potentially determine whether or not changes in mobility and land-use often assumed to have coincided with major evolutionary events (e.g., the Middle-Upper Paleolithic transition) actually occurred. Lithic artifact counts and densities from excavated cave and rockshelter sites and surface surveys in Spain and Jordan are used to illustrate the potential of the approach.

Clark, Brian (Rice University)

[181]

Ethiopia's Peripatetic Royal Capitals and Prospects for Their Study

From the thirteenth to seventeenth centuries, emperors of Ethiopia, attended by the royal court, largely abandoned rule from fixed capitals in favor of a migratory lifestyle suited to projecting imperial power across an unruly collection of subjugated states and territories. At its peak, this system of administration was formalized into a highly regulated assembly of people with the visual and functional attributes of a royal urban center, though it lacked the spatial permanency of a conventional city. The archaeological study of such a site then is important not only for better understanding the context of royal power and authority in medieval Ethiopia, but would also make a major contribution to our understanding of urbanism and the diversity of forms it may take. The mountainous setting of the Ethiopian Highlands, however, poses a number of challenges to the identification and study of such ephemeral settlements. This poster will outline the significance and archaeological identification of such settlements with attention toward recent research into highland formation processes, human and natural, likely to affect the archaeological visibility and preservation of such ephemeral settlements.

Clark, Barbara

[260] *The Best Days at FPAN are Shared with Others: The Various Partnerships FPAN had Developed Over the Years*

Since its inception, the Florida Public Archaeology Network has relied on partnerships with other organizations to help meet our goal of public awareness and education. Throughout the years, we have partnered with various organizations to offer training, workshops, youth and adult programs, and other opportunities for the public to learn about Florida's archaeological heritage. Each of these partnerships is unique and bring with them their own challenges and successes. This paper will discuss some of the partnerships FPAN has developed over the last ten years and share some of the lessons we have learned through these partnerships.

Clark, Ryan (Field Director, Prentice Thomas & Associates)

[286] *Engendering the Monongahela: Social and Spatial Dimensions of the Johnston(36In2) Village Site Mortuary Practices*

Since the early 1930s, systematic archaeological excavations of Monongahela sites have produced a large mortuary assemblage. Despite the large number of burials, Monongahela mortuary studies have remained mainly descriptive. Previous attempts to categorize Monongahela mortuary behavior have relied on generalities about Monongahela burial data, masking the importance of gender and age variability within a site. This research presents the results from a study using comparisons of patterns among spatially segregated burials, gravegood associations, mortality curves, grave orientation, and spatial patterns which provide information important to understanding the range of different activities and contexts that likely involved gender. The results of this research provide a baseline for an examination of the Monongahela mortuary complex in relation to the cultural manifestations of the Johnston Site, Blairsville, Pennsylvania (36In2).

Clarke, Andrew (University of Cambridge, UK)

[223] *10,000 Years of Bottle Gourds (Lagenaria Siceraria): Archaeology of the First Global Crop*

The bottle gourd (*Lagenaria siceraria*) has been cultivated for at least 10,000 years and was the only plant species cultivated in both the Old and New Worlds before Columbus; in this sense, it can be considered the world's first global crop. Its durable fruit shells are used for containers, apparel, and musical instruments throughout the tropics, subtropics, and some temperate zones worldwide. Despite the importance of bottle gourd, its distribution across many cultures, and a long-standing interest from archaeologists, very little is known about its origins and dispersal. Based on a synthesis of the available archaeological and genetic evidence, a model of the evolutionary history of the bottle gourd is presented, with a focus on the origins, human selection, and dispersal of this important crop. Particular attention is given to the bottle gourd in Africa—the putative homeland of the species, but the region about which least is known. Progress using ancient DNA (archaeogenetic) analysis for reconstructing the history of bottle gourd is also presented. Further understanding the history of bottle gourd will allow insights into the tempo and mode of human selection, the development and spread of agriculture, and biological exchange in the Anthropocene.

Clarke, Geoff (ANU, Australia), Aaron Camens (Flinders University), Simon Haberle (ANU) and Atholl Anderson (ANU)

[223] *Radiocarbon Dated Archaeozoological and Palaeoecological Evidence of Initial Human Colonization in Madagascar*

Human impacts to Madagascar, through the introduction of non-native species, habitat modification, and species extinctions, are thought to have begun in the prehistoric period. Understanding of these anthropogenic modifications to Madagascar's ecosystems is, however, impossible without solid chronologies for human settlement and expansion across the island, which are currently lacking. Estimates of the period in which people first colonized Madagascar have varied considerably, and never more so than today. Archaeological remains of material culture generally suggest colonization began 1400–1100 B.P., within a context of Austronesian migration. However, palaeoecological changes and apparent cultural damage on the bones of extinct megafauna have been radiocarbon dated as occurring 2000–4000 B.P. and one archaeological site extends to 4300 B.P. by OSL dating. We question aspects of this evidence and report that results from our archaeozoological and palaeoecological fieldwork in southwest Madagascar, indicate substantially later human settlement.

Clasby, Ryan (UMSL)

[56] *Understanding the Ceja de Selva in Relationship to the Central Andean Coast and Highlands during the Early Horizon*

Andean archaeologists have long debated the degree to which the ceja de selva or eastern Andean montane forest was involved within the larger historical processes that led to the development of sociopolitical complexity in central Andean highlands and coast. For some scholars such as Julio C. Tello and Donald Lathrap, the apparent tropical forest influence in Chavín iconography as well as the similarity of eastern slope ceramics to contemporary highland and coastal assemblages suggested that the region was well connected to events happening in the central Andes during the Initial Period and Early Horizon. While this debate was long hampered by a lack of research, a recent surge of investigations in the ceja de selva have provided new insights into the type of societies that developed in the region. This paper will attempt to synthesize these results using new evidence from the site of Huayurco in the northeastern slopes of the Peruvian Andes to better contextualize the role of the ceja within Early Horizon interaction networks. Particular emphasis will be placed onto the degree to which the ceja participated within the Chavín sphere of interaction.

Clauter, Jody (Office of the Wyoming State Archaeologist), Zachary Garhart (University of Wyoming Archaeological Repository), Adam Guinard (University of Wyoming Archaeological Repository) and Rachael Shimek (University of Wyoming Archaeological Repository)

[265] *Clovis Points, Trade Beads, and Everything in Between: Collections at the University of Wyoming Archaeological Repository*

This poster details the archaeological collections housed at the University of Wyoming Archaeological Repository (UWAR) located in Laramie. The repository houses approximately three million artifacts from 15,000 different Wyoming sites as well as comparative, replica, experimental, and educational materials. We highlight our extensive suite of artifacts from across the state, which includes artifacts from all time periods from the Paleoindian to the Historic. Many of these objects are submitted through private donations, academic research, or are curated by contractors through federal projects. We

also discuss our partnerships with state, federal, and local agencies to complete education and outreach programs. These programs increase awareness and use of our archaeological collections in a variety of ways including hosting visiting researchers, loans to museums and historical societies, exhibit preparation, school group tours and classroom activity development, and an archaeological collections management class for undergraduates and graduates at the university. Finally, we show how we have used information from our own research on older collections to enhance modern investigations.

Clauwaerts, Pauline (Université Libre de Bruxelles)

[118] *The Priestesses of San José de Moro: Toward a Material Approach of Personhood in the Moche World*

After more than 20 years of investigations, the San José de Moro Archaeological Project has discovered a total of seven funerary chambers pertaining to Late Moche "priestesses" (A.D. 600–850) in one of the most important ceremonial centres and cemeteries located on the north coast of Peru. This attribution was made by the correlation with different elements present in the tomb referring directly to this character. This "priestess set" works as an efficient identification criterion. However, the image of this emblematic Moche priestess became fixated in the collective unconscious. We argue that this aspect of their identity is not the only one we can identify in the grave. With this paper, we move away from the traditional iconographic assignation. Instead, we look into the plural personhood of these women through an analysis of the material correlates found in the tomb. We explore the material data related, along with the architectural and anthropological data, considering the tomb as a "biographical object." Finally, we aim to highlight the singularities of their individual personhood and consequently draw a more complete portrait of these singular women.

Clay, Elizabeth (University of Pennsylvania)

[126] *Constructing Space and Community within Landscapes of Slavery in Early 19th c. Jamaica*

While household artifact analyses contribute a great deal to understanding the enslaved experience in the colonial Caribbean, where possible, landscape studies allow archaeologists to more completely reconstruct past built environments of slavery. Using a landscape approach, this paper investigates the use of space by the enslaved population at Marshall's Pen, a nineteenth century Jamaican coffee estate. Through landscape survey, we can better understand how enslaved men and women actively constructed space to suit their needs and in doing so created a unique community of individuals and families. In order to reconstruct how this community came about spatially, we investigate architectural variability, the delineation of associated house yards, the construction of gardens and pens, and the conglomeration of these features into compounds. This type of analysis provides a much more detailed understanding of the living environment of enslaved workers than that which is available through the documentary record alone.

[126] *Chair*

Clayton, Sarah (University of Wisconsin-Madison)

[129] *A City in Decline: Insights on the Collapse of Teotihuacan from the Southern Basin of Mexico*

In this paper I discuss the urban decline and political breakdown of Teotihuacan from the vantage of Chicoloapan Viejo, an agrarian settlement situated in the Basin of Mexico hinterland, 40 km south of the capital city. Fieldwork in the southeastern Basin, including settlement survey led by Jeffrey Parsons in the 1960s and excavations at Chicoloapan in 2013 and 2014, shows that population numbers in this area grew dramatically in the years surrounding the state's dissolution. As a settlement that expanded whilst others, elsewhere in Basin, were abandoned, Chicoloapan presents an opportunity to consider the conditions and strategies that promote resilience in the midst of decentralization and to examine collapse as a simultaneously regional and local process. I present the results of recent excavations at Chicoloapan and their implications for understanding changing practices, material culture, and heterogeneity among local households through time. I emphasize the impact of migration on demographic growth in the area, including the possible reception of previous residents of Teotihuacan, a city that was in the throes of urban decay. Finally, AMS radiocarbon determinations from multiple domestic contexts at Chicoloapan make it possible to relate changes on a community scale to broader processes of contracting state power.

[129] *Chair*

Cleghorn, Naomi [181] see Peart, Daniel

Clifton, Virginia (Colorado State University/EBI Consulting)

[39] *Victorian Era Opiate use at the Vanoli Red Light District of Ouray, Colorado*

By 1875 Ouray, Colorado, was a booming mining town with a prosperous red light district (Vanoli Site 5OR30) after rich silver veins were discovered in the surrounding mountains. As the town rapidly expanded and prospectors flooded into the mines, the red light district flourished, entertaining the thousands of miners in the area. In 1977, excavations led by Steve Baker investigated the lives of patrons and prostitutes who frequented the Vanoli red light district. As a result, thousands of artifacts were unearthed. Of primary interest to the current investigation are those associated with recreational drug use, which are suggestive prostitution culture at the end of the Victorian era. This paper researches the assemblage of over 300 complete medicine bottles recovered from three privies located in close proximity to the Gold Belt Theater, the 220 Dance Hall, and the prostitutes cribs. The Vanoli sample, compared against other collections and publications, determined which bottles once contained heroin. The cultural and biological significance of heroin use at the time are important elements to this conclusion. From this evidence, it is likely that the prostitutes and their clients were engaging in recreational heroin use.

Clifton, Julia [265] see Montoya, Amy

Cobb, Charles (Florida Museum of Natural History) and Gifford Waters (Florida Museum of Natural History)

[18] *The Catechism of Time Discipline in the Franciscan Missions of La Florida*

Franciscan missions in La Florida have been characterized as struggling between an unresolved duality between their Christian obligations and their mandated support functions for the larger colony. We suggest that there was a dialectical symmetry between these demands. Catholicism introduced a new set of rhythms into the daily life of Indigenous communities centered on prayer, study, the sacraments, feast days, and other ongoing religious observances. This periodization of time and behavior coincided with the requirements of missions to provision St. Augustine and the colony under the system of repartimiento. The depiction of friars as "agricultural extension agents" underscores the ability of clergy to foster a philosophy and practice of ecclesiastical time management that melded ontologies of surplus labor and spiritual rites. Archaeological and ethnohistorical evidence suggests that this process was highly uneven, marked by conformity, subtle resistance, and outright revolt.

Cochran, Tiffany**[29]** *Beyond the Dirt: Protecting the Council Oak*

This presentation examines one unique project in which archaeologists from the Seminole Tribe of Florida's (STOF) Tribal Historic Preservation Office act as caretakers of a living artifact; the Seminole Tribe's Council Oak tree in Hollywood, Florida. The Council Oak evolved from a convenient shady spot for meetings to one of the most important cultural symbols of the Tribe today. Tribal archaeologists, despite a lack of experience in arboriculture, must face challenges such as natural catastrophes, encroaching urbanism, previous harmful moderations, and shifting tribal priorities in order to preserve this historic living landmark for future generations of tribal members. This unique project demonstrates the need for archaeologists to examine and pay attention to more than just what is in the dirt.

Cochran, Lindsey [191] see Gadsby, David

Cochrance, Ethan [296] see Golitko, Mark

Codlin, Maria (Boston University) and Mark McCoy (Southern Methodist University)**[227]** *Social Landscapes and Kapu in the Hawaiian Islands: A Case Study from the Ka'ū district, Hawai'i Island*

In ancient Hawai'i, elites employed ideology as a way of acquiring and stabilizing political and economic power. Material evidence of this is found in the numerous temples throughout the islands and in the formalized rules for constructing households. Ethnohistoric literature describes Hawaiian households as a collection of buildings with specific functional purposes. By segregating these activity areas, the Hawaiians were seen to observe kapu, a Polynesian ideological concept which, in Hawai'i, includes many restrictions around gender and eating practices. This was particularly vital to the elite as failure to observe kapu could pollute mana, the divine source of authority and power. This project looks at the functional and spatial attributes of a number of households from Manukā in Ka'ū district on Hawai'i Island to build a picture about how ideology is incorporated into households in the region. Our research supports the idea that kapu was pervasive in the Hawaiian landscape and that its incorporation into households occurs regardless of rank.

Coe, Marion (Texas A&M University - CSFA)**[114]** *Perishable Artifacts from Bonneville Estates Rockshelter (26EK3682), Nevada: A Technological Analysis of Artifacts from the Early through Late Holocene*

Bonneville Estates Rockshelter (26EK3682) in Elko County, Nevada, is a stratified multi-component site on the western edge of the Bonneville Basin excavated between 2000–2009. The shelter has produced hundreds of perishable artifacts spanning from the early Archaic to historic periods, and it provides an excellent opportunity to examine perishable technology diachronically throughout the Holocene in the eastern Great Basin. This poster presents the results of a complete analysis of all perishable artifacts recovered from the Bonneville Estates Rockshelter excavations, covering technological organization of coiled and twined basketry, cordage, snares, knots, moccasins, and miscellaneous fiber constructions. This study reveals periods of major technological change throughout the Early and Late Holocene, and these are considered in the context of debates regarding the relationship between ecological adaptation and cultural change among human populations in the eastern Great Basin.

Coello Rodríguez, Antonio [281] see Smit, Douglas

Coffey, Grant [66] see Davis, Kaitlyn

Cohen, Anna (University of Washington)**[63]** *Aztec Imperial Strategies in Guerrero, Mexico: Evaluating the Greengo Collection from the Burke Museum, Seattle*

Aztec presence in Guerrero, Mexico, is documented ethnohistorically, but archaeological work can be difficult to undertake in this volatile region. The Triple Alliance provinces in Guerrero served as important sources of tribute, but also as buffers against the hostile Purépecha regime to the west. Though Aztec imperial strategies varied in different provinces, tribute policies in Tepecoacuilco were thought to have facilitated intensification of production and reorganization of economic activities. What did this reorganization look like and how did it impact regime-subject relations? How can material from a museum collection contribute to this understanding? Here, I try to address these questions by examining Tepecoacuilco ceramics that were excavated in northern Guerrero by former Burke Museum curator Robert E. Greengo. In addition, I include information from detailed field notebooks about living and working in Mexico in the 1960s and previous research undertaken by Greengo. Considering recent and historical events in Guerrero, study of museum collections is critical for researchers who work in volatile regions.

Cohen, Anna S. [101] see Solinis-Casparius, Rodrigo

Cohen, Rachel (University of Pennsylvania)**[184]** *Landscapes of Death and Burial in the South Caucasus: The Kurgans of Naxçivan, Azerbaijan*

While burials have long been an important source of archaeological information, they have traditionally been studied mainly from a site-based perspective. This traditional view focuses on the form of the burial, the grave goods contained, and osteological evidence on the age, sex, and health of the interred individual. By contrast, the landscape approach studies burials as part of a broader natural and cultural landscape that extends beyond site boundaries. This project focuses on kurgan burials in Naxçivan, Azerbaijan, dating to the Middle Bronze Age. Based on their form and location, these burials could have been associated with either sedentary agriculturalists or mobile pastoralists, and they existed on a landscape that was used by both groups. Comparing the Naxçivan kurgans to kurgan data from Middle Bronze Age Armenia, this project analyzes viewsheds and proximity to nearby sites to determine the role that these kurgans played for the communities that built them. Not only does this analysis reveal information about the social, cultural, and political significance of kurgan burials in the South Caucasus, but it also demonstrates the utility of a landscape approach to the archaeological study of burials.

Coil, Reed (University of Minnesota), Martha Tappen (University of Minnesota), Reid Ferring (University of North Texas), Maia Bukhsianidze (Georgian National Museum) and David Lordkipanidze (Georgian National Museum)

[87] *Spatial Patterning and Site Formation at Dmanisi, Georgia*

The early Homo site of Dmanisi, Georgia, offers some of the clearest insights into the first dispersals from Africa by early members of our genus. On a more local level, the site contains very well preserved bones with excellent provenience data, which allows for an in depth look at spatial associations of archaeological material. In this paper, we look specifically at one excavation area at Dmanisi, Block 2, where majority of the hominin fossils have been uncovered. Using spatial analyses methods, we test different distributions of faunal sub-assemblages in order to assess the degree of behavior-related formation processes involved in the accumulation of archaeological material, with a primary focus on the most prolific layer, B1, and its pipe/gully fill facies, B1x, y, and z. With little evidence of post-depositional movement, bone transport, or density mediated attrition, much of the material accumulation resulted from carnivore and hominin activity, though the latter contributed much less, and some analytical units of the faunal assemblage are spatially clustered and segregated. Lithic distributions are more random, but are implicit in addressing hominin agency at Dmanisi.

Colaninno, Carol (Arkansas Archeological Survey)

[133] *Subsistence, Landscape, and Identity as Explored through Archaeofaunal Remains from Northwestern Florida*

This paper explores relationships among subsistence, landscape, and identity on the northern Gulf Coast of Florida. Zooarchaeological assemblages from three Woodland-period shell midden sites (8BY1347, 8BY1355, 8BY1359), all located on a small (150 km²) peninsula in Bay County, Florida, differ in molluscan species composition reflecting proximity to varied marine and estuarine habitats. Coastal dwellers had flexible subsistence regimens, targeting local habitats rather than specific resources. Burial mounds associated with these same midden sites, excavated by C.B. Moore in the early twentieth century, yielded examples of human burials with worked shell objects and/or "masses" of unworked shells. Based on Moore's descriptions, molluscan species compositions in burial contexts generally mirror those of associated midden assemblages. Exceptions to this pattern, though rare, are important because the types of shells that were, or were not, considered appropriate as burial accouterments do not necessarily reflect their economic importance to people using the site. We argue that people at different sites had differential access to resources by virtue of their physical and social position within a broader social landscape, but that specific taxa also had symbolic meanings related to place-based social identities.

[28] *Chair*

Colaninno, Carol E. [28] see Compton, Matthew

Colburn, Mona [9] see Styles, Bonnie

Cole, Emily [271] see Simpson, Bethany

Coleman, Julie, T.J. Ferguson (Anthropological Research, LLC), Maren Hopkins (Anthropological Research, LLC), Lynn Robinson (San Juan National Forest) and Leigh Kuwanwisiwma (Hopi Tribal Preservation Office)

[267] *Chimney Rock Ethnographic Partnership*

The Chimney Rock Great House and associated sites are located on the frontier of the southwestern landscape that was occupied by the Ancestral Puebloans over a thousand years ago. Memories of that time and place still exist in tribal histories and ceremonies. Current knowledge and understanding of these resources comes from sporadic archaeological investigations conducted over the last 90 years. The cultural and traditional knowledge that descendants of the "Ancestors" possess of this cultural landscape and associated archaeological sites and their meaning over the centuries has yet to be accessed by the scientific community and the public. The synergistic combination of scientific archaeological research combined with native knowledge of place and history can provide striking insights into the human experience and meaning of these landscapes. In similar studies elsewhere in the southwest, the absence of the tribal voice "has created an interpretive silence that excludes the unique perspectives of the descendant communities." This project addresses this silence and gives voice to the descendants. Ethnographic researchers will collaborate with tribal members to integrate traditional knowledge with archaeological and historic data to enrich our understanding and appreciation of this unique cultural landscape and the people who lived there throughout the centuries.

Collins, Ryan (Brandeis University)

[77] *Commemoration or Termination? Evaluating Early Public Ritual in Yaxuná, Yucatan, Mexico through Ethnography and Ethnohistory*

Through hieroglyphic, historical, and ethnographic documentation, the act of ensouling and cleansing an architectural space is a well documented ritual activity practiced among Mesoamerican cultures. Acts that commemorate space, whether marking renewal or termination, often leave traces. As can be attested archaeologically, the trace evidence commemorative acts are often visible on several surfaces in an architectural sequence, speaking both to the continuity and disjuncture in such practice. Recent investigations in the Central Plaza of Yaxuná, Yucatan, Mexico, have revealed evidence of two traditions marking the same space over the six phases of floor construction roughly ranging from 600 B.C. to 200 A.D. This paper looks at the material evidence of surrounding both isolated and episodic burned patterns on floor surfaces and the layering of sediment in relation to known ethnographic and historical accounts of traditions of commemoration. Coupled with each independent layer are deposits commemorating not only construction but also termination, rendering a complex story blending both ritual and civic practice. The goals of this paper are to comparatively evaluate the evidence of past activities in terms of known ethnographic and historic examples of commemorative architectural traditions and also to better understand ritual public activities of this early period.

Collins, Matthew [84] see McGrath, Krista

Colten, Roger (Peabody Museum of Natural History, Yale University) and Brian Worthington (National Park Service, Southeast Archeological Cen)

[222] *Archaic Era Vertebrate Faunal Remains from Cuba*

The broad patterns of Archaic or pre-ceramic subsistence adaptations are not well known for the broader Caribbean region partly due to the ecological variability among the islands and limited quantified faunal data from sites of appropriate age. The state of knowledge for Cuba is hampered by a limited number of radiocarbon dated archaeological sites. In this paper, we present quantified vertebrate faunal data and radiocarbon dates from three Cuban

sites, Las Obas, Vega del Palmar, and Los Caracoles. These sites are all considered Archaic in age although Vega del Palmar contains ceramics of the Pre-Arawak Pottery Horizon type. The three faunal assemblages are similar in exhibiting a diversity of taxa and habitats and in the importance of various species of hutia. However, the taxonomy of these capromyid rodents varies among the sites and the proportions of other taxa also vary by site. In addition to abundant hutia, the site's occupants exploited an array of fish, birds, reptiles, and other mammals, including manatee. In this paper, we compare the three sites' faunal assemblages and discuss their ecological significance.

Coltman, Jeremy (University of California, Riverside)

[107] *Under the Cover of Night: The Liminal Landscape in Ancient Maya Thought*

For the ancient Maya, the landscape was wild, untamed, and dotted with caves, which were the darkest of spaces. On an empirical level, caves can reveal the ancient Maya experience of intimate darkness and nullified senses. Such experience belonged to the night, which was fraught with danger, temporally distant, and inhabited by a cast of anti-social beings. These beings belonged to the wilderness and dark forests that lacked internal order and spatial division. Much like the concept of chaos in Classical antiquity, the darkness of night symbolized the mythological past that predated the creation of the sun and the ordered world. This paper will explore the dark depths of night and will offer a reappraisal of the Maya "underworld" by way of a liminal landscape where basic human actions such as sleeping and dreaming intersect with the realm of creation, curing, and witchcraft, all of which coexist together under the cover of night.

Coltrain, Joan B. [217] see Shirar, Scott

Colvin, Matthew and Victor Thompson (University of Georgia)

[108] *A Procession of Faces: Considering the Materiality of Relational Ontologies in Southern Florida*

Recent materiality scholarship seeks to understand the entangled world of belief and practice. The experience of the world is both cognitive and material and scholars are beginning to embrace the idea that there is no separation between the two. Understanding the intertwined nature of the cognitive and material world is at the center for evaluating the nature of groups that embrace a relational view of the world. In this paper, we consider the essential role that material culture plays in the relational worldview of the peoples of southern Florida. In particular, we focus specifically on perishable material culture that either possesses animate properties or is animated by individuals through performance. Throughout our discussion, we explore how these particular aspects of material culture are shaped and shaped by the histories of the people who lived in the region. We use this discussion as a departure point to argue that the peoples of southern Florida likely had different ontological histories than those of the interior American southeast, which were likely rooted in the aquatic landscapes they inhabited.

Colvin, Matthew [246] see Lawres, Nathan

Compton, Matthew (Southeastern Zooarchaeological Research, LLC) and Carol E. Colaninno (Arkansas Archeological Survey)

[28] *No Need for White-out: Building on Betsy's Work on Multiethnic Community Foodways in Spanish Florida*

Elizabeth Reitz has had a distinguished career partially built on her efforts to document exchanges in foodways as groups came together to form multiethnic communities. Her research investigating animal remains recovered from multiethnic communities in colonial Spanish Florida exemplify this work. She has shown that as Native Americans and Spaniards interacted, they blended their established food traditions. Part of this blending was the introduction of novel subsistence strategies (in both directions) and the subsequent adoption, adaptation, or rejection of the interacting society's approach to food production. These shifts in subsistence strategies, or lack thereof, took place in the midst of rapidly evolving societies and shifting economic conditions that played a role in community decisions regarding the acquisition of food. We expand upon Betsy's research into Spanish and Native American foodways with recently excavated faunal remains from seventeenth-century deposits from Sapelo Island, Georgia. The deposits are currently identified as the probable location of the Gule town of Sapala and Spanish Mission San Joseph de Sapala. Analysis of the Sapelo Island faunal remains indicates the multiethnic community of Native Americans and Spanish immigrants on Sapelo Island followed a practice of blended traditional foodways very similar to that previously observed elsewhere by Reitz.

Cong, Jianrong [173] see Lam, WengCheong

Conger, Megan (University of Georgia)

[144] *Transformations in Native and European Trade Networks Across Northern Iroquoia*

Native North Americans began to engage in exchange with European explorers, merchants, and missionaries during the mid-to-late sixteenth century. Previous studies of these initial exchange interactions in northern Iroquoia (including the lower Great Lakes, Saint Lawrence Lowlands, and northern Allegheny Plateau) have been narrow in spatial and social scale, focusing often on the initiation of trade relationships between Europeans and a specific nation (for instance, the Mohawk) and the rate at which that nation incorporated European goods into their material repertoire. The timing of these nascent relationships throughout the northeast has not been compared, nor has a regional comparison of the nature of the earliest trade goods been attempted. Using published material culture data, I compare variation in the earliest evidence of European goods throughout northern Iroquoia. I argue that the tempo at which European goods were accepted by Native people, as well as the specific ways those objects were used, varies throughout the project area. In particular, I consider the effects of direct (European-Native) and indirect (Native-Native) exchange on the ways that Native people creatively used these objects to specific, culturally-meaningful ends.

Conkey, Margaret (UC-Berkeley)

[107] *Discussant*

Conkey, Meg [261] see Ashley, Michael

Connolly, Robert [71] see Malloy, Maureen

Connolly, Jocelyn (The University of Cincinnati)

[112] *Modeling Woodland Land Use in the Lower Little Miami River Valley, Ohio*

This paper examines Woodland (ca. 1,000 B.C.E. to 1,000 C.E.) land use patterns in the lower Little Miami River valley of Ohio. Theoretically, two models can be applied to the distribution of archaeological sites which date to the Woodland cultural period in this region: an ideological model based on ceremonial and mortuary behavior and a pragmatic model based on the socio-economic optimizing and risk-reducing behaviors of human evolutionary ecology. Archaeological data including artifact typology and composition, distance from food resources, raw material resources, and water at the time of occupation, elevation, geographic location, geological landform, relative and chronometric age, soil type and underlying stratigraphic composition, site size and type, and slope were collected from the Ohio Archaeological Inventory (SHPO), collector interviews, bucket auguring and soil probes, natural stream and ditch profiles, shovel testing, and systematic and opportunistic surface survey. These data were digitized and encoded into ArcGIS 10.3.1. Land use models were evaluated using multivariate regression analysis to understand the relationships between variables to determine and quantify variables that influenced observed patterns of Woodland site locations.

Connolly, Robert (University of Memphis) and Elizabeth Cruzado Carranza (University of Memphis)

[206] *Co-Creation, Applied Archaeology, and Community Engagement in Ancash, Peru*

Initiated through the Proyecto de Investigación Arqueológico Regional Ancash, the cultural heritage component of the archaeological research program in the village of Hualcayán, Ancash, Peru, has taken on an increased "co-creative" perspective over the past two years. We define co-creative processes as those where the cultural heritage professional partners with a community in projects that address the expressed needs of the local residents. This poster reports on the process of implementing co-creative oral history and archaeological collections management projects over since 2014 in the Ancash communities of Hualcayán, Hullanca, Caraz, and Nivin. We evaluate the outcomes from the perspectives of the meeting the expressed community needs, project sustainability, and project relevance as applied archaeological practices.

Conti, Kevin [67] see Lea, Trevor

Cook, Jacqueline (Wanapum Band of Priest Rapids) (Confederated Tribes and Bands of the Yakama Nation)

[30] *Repatriation of the Ancient One - A Tribal View: Then, Now, and In-Between*

The Ancient One's 8,400 year old remains were claimed by Native American Tribes as their ancestor after eroding from the banks of the Columbia River in 1996. What began as an Inadvertent Discovery, defined in the Native American Graves Protection and Repatriation Act (NAGPRA), turned into a 20-year challenge to the Act, tribal culture, oral traditions, and religious beliefs.

In 2004, the Ninth Circuit Court of Appeals upheld a lower court ruling allowing scientific study of the Ancient One; the courts determined this individual was not Native American and not subject to NAGPRA. Considered not a Native American, he could not be culturally affiliated. Despite court rulings, the Confederated Tribes of the Colville Reservation, Confederated Tribes and Bands of the Yakama Nation, Confederated Tribes of the Umatilla Indian Reservation, the Nez Perce Tribe, and the Wanapum Band have stood by their knowledge and traditions. These tribal teachings were substantiated by DNA studies. The Ancient One is Native American and related to the Columbia Plateau tribes. This presentation will discuss the journey the claimant tribes made in their effort to repatriate the Ancient One, the effects on NAGPRA, and the relationships between the claimant tribes and Agencies.

Cook, Gregory

[83] *Updates on Current Investigations of the 1559 Luna Fleet*

This presentation focuses on the ongoing investigations of shipwrecks from the Spanish fleet of Tristan de Luna, who attempted to colonize northwest Florida in 1559. Fieldwork conducted during the last year has yielded exciting new insights into the expedition, and the ships that made up the fleet.

Cook, Anita [91] see Williams, Patrick Ryan

Cook, Jessica (University of Georgia) and Nathan Hale (University of Georgia)

[164] *Springs, Stone, and Shell: Recent Excavation at the Econfina Channel Site, a Submerged Archaic Site, Apalachee Bay, Florida, U.S.A.*

We present here the results from recent surveys and excavations at the Econfina Channel Site in Apalachee Bay, Florida, U.S.A., a submerged prehistoric site with a terminus post quem of approximately 5000 B.P. This site was initially identified and excavated in the 1980s in the course of a larger survey for submerged prehistoric sites in Apalachee Bay by Faght, et al. Our relocation and new excavations at the site have confirmed the presence of chert outcrops, a shell midden deposit, and a seep where fresh water, most likely from the Floridan Aquifer, is still discharging into the Gulf of Mexico. We will discuss the findings in the larger context of the submerged archaeological landscape in Apalachee Bay and coastally adapted occupations along the Gulf of Mexico coastline, as well as offer observations concerning taphonomic issues specific to submerged prehistoric sites in this region.

[164] *Chair*

Cook, Robert (Ohio State University) and Sachiko Sakai (California State University Long Beach)

[292] *Examining the Fort Ancient Madisonville Horizon "Index Fossil" Pottery Type Using Optically-Stimulated Luminescence*

Establishing temporally-diagnostic artifacts has long been a tradition in American archaeology. One such case is that of using the Madisonville-type pottery, one of the most agreed upon temporal markers in the Fort Ancient region of the Middle Ohio Valley. This pottery type is often used as the defining characteristic separating A.D. 1400–1650 Fort Ancient sites from those dating to the earlier A.D. 1000–1400 period. While this temporal marker has been demonstrated in strict terms through stratigraphic relationships (i.e., Madisonville pottery is more characteristic of the more recent sites and vice-versa), what has not been examined is the extent of overlap between the two pottery traditions. This is important, as sites with multiple pottery types including Madisonville are often interpreted as having separate components, with Madisonville being the most recent. However, if there is considerable temporal

overlap, then that interpretation is not wholly correct, which means that such sites may better be seen to represent aggregations of peoples with different pottery traditions. To examine this problem, we focused on one site (Hahn) that has clear evidence for both traditions and that are often deposited in the same trash pits. We directly test this temporal claim through optically-stimulated luminescence (OSL).

Cookson, Corey [132] see Ames, Kenneth

Cool, Autumn

[39] *Archaeological Night-Vision: Experiments in Aerial Thermography*

For several decades it has been known that aerial thermography can be used as a geophysical prospecting method. The accidental discovery of an ancient Sinagua agricultural field complex in 1966 prompted a series of experiments throughout the 1970s and 1980s, which confirmed the effectiveness of aerial thermography in archaeological applications. Even so, thermal imaging was rarely utilized in archaeological field research due to the extreme costs and high level of technical expertise demanded by the method. Today, the status quo is changing as the introduction of modern high-quality, compact thermal cameras coincides with the proliferation of affordable, user-friendly unmanned aerial vehicles (UAVs). Aerial thermography is now within the reach of most field researchers and can be easily employed to collect an alternative or complementary data set to other geophysical prospecting methods. However, many questions still remain regarding the ideal timing and conditions for thermal data collection. This poster will present the methods and results of a master's thesis experiment designed to explore the impact of several environmental factors on the efficacy of this exciting new survey technique.

Coonerty, Nina (University of California, Santa Cruz), Susan Kuzminsky (Univ. Católica del Norte, Chile, UC Santa Cruz) and Lars Fehren-Schmitz (Anthropology Dept., UC Santa Cruz)

[204] *A Reappraisal of Cranial Shape among Prehistoric South Americans and its Implications for the Peopling of the New World*

Recent studies of South American populations have played an integral role in elucidating the timing, origin, and migration routes of the first Americans. Much attention has centered on the cranial shape of these prehistoric populations, which some researchers have described as having two distinct head forms. The cranial shape of early Holocene Paleoamericans has been categorized as dolichocephalic (long-headed), while later populations have been generally described as brachycephalic (round-headed). These differences have been used to infer multiple origin models, some of which propose that the dolichocephalic population was biologically distinct and later replaced by brachycephalic individuals. However, some recent genetic studies suggest that prehistoric South Americans all share a common ancestral origin. Given the incongruity between genetic and cranial data, we test the hypothesis that Holocene populations consist of two skull morphologies that coincide with the Early and Late Holocene periods. Using 3D models, we computed cranial indices of 95 individuals from western South America that date to the Early, Middle, and Late Holocene. Our findings support genetic data and show that many crania have an intermediate shape, with no clear transition from dolichocephaly to brachycephaly. Instead, South American crania show a range of variation throughout the Holocene.

Coons, Aaron (University of Alberta), Kisha Supernant (University of Alberta) and Terry Gibson (Western Heritage)

[190] *Remote Sensing at the Buffalo Lake Métis Wintering Site (FdPe-1): Follow-Up Results*

The Buffalo Lake Métis Wintering Site (FdPe-1), located in central Alberta, Canada, presents one of the most extensively studied examples of overwintering practices amongst the Fur Trade-era Métis. With historical records accounting for approximately four hundred cabins being present at the site in 1876, this site has the potential to have been the largest settlement west of the Red River at the time of its occupation. However, surficial evidence of these cabins is now scarce as a result of modern agricultural practices. Geophysical surveys were conducted at the site during the 2014 and 2015 field seasons, with a focus upon magnetometry and ground-penetrating radar. The results of these surveys as well as their follow-up test excavations are presented, with a focus upon the spatial distribution of the features and their contents.

Cooper, Leslie [7] see Bates, Lynsey

Cooper, Jago (British Museum)

[222] *Discussant*

Cooper, Leslie (Monticello)

[293] *Chair*

Copeland, Steven [66] see Davis, Kaitlyn

Copeland, Lauren (California State University, Los Angeles), Jocelyn Acosta (California State University, Los Angeles) and Marilyn Bueno (California State University, Los Angeles)

[93] *An Analysis of Ceramic Function from the Sacred Landscape Archaeological Project, La Milpa, Belize*

In 2014 and 2015, the California State University, Los Angeles Sacred Landscape Archaeological Project carried out investigations of a collapsed chultun at the site of La Milpa in northern Belize. Excavation revealed a heavy concentration of ceramic and artifacts immediately surrounding the collapse with concentrations dropping precipitously only a few meters from the complex. This report analyzes the ceramic sherds recovered in excavation. The ceramics were sorted into six categories: unslipped, unslipped striated, Tinaja Red, monochrome slipped, fine paste & special, and unidentifiable. While the categories were supposedly defined based on surface finish, the sorting process actually created form categories as well with the first four categories being limited mostly to jars and a small number of bowls. Functional data was also recorded with evidence of interior burning noted for all categories. Interior burning was concentrated in the unslipped pottery, especially the unslipped striated. The implications for site function will be discussed.

Coppa, Alfredo [24] see Muzzall, Evan

Corado, Maria de los Angeles [46] see Davies, Gavin

Corbett, Debra [124] see Taivalkoski, Ariel

Corbett, Jack (Portland State University) and Jorge Rios Allier (Instituto Nacional de Antropología e Historia)

[231] *Comunidades y Sitios de Patrimonio Mundial: Pasos hacia una Colaboración Participativa.*

En las décadas posteriores a la firma de la Convención del Patrimonio Mundial, el modelo dominante para el manejo de dichos sitios se concentró en la formación de equipos de expertos y profesionales comisionados para manejar los procesos operativos según los marcos y prácticas establecidos por sus pares. Si existía una población local su responsabilidad consistía en conformarse con la tutela de los reconocidos por UNESCO o por dependencias nacionales como los responsables.

Hoy en día estamos frente un reconocimiento que las voces comunitarias y las prioridades de los pobladores locales también merecen una consideración en el manejo de los sitios. Mediante un análisis de dos casos de sitios recién-nombrados en Canadá y México podemos ver cómo sitios que a la vista parecen muy diferentes en realidad, contemplados desde el nivel comunitario, manifiestan desafíos similares. De hecho, sitios tan diferentes como la orilla de la Bahía de Fundy y un valle semi-árido en Oaxaca han despertado expectativas entre la población local en el manejo cotidiano de los sitios nombrados "patrimonio mundial." Es decir, las comunidades exigen pasar de un papel de contexto pasivo a un estatus de colaboradores activos.

Cordell, Ann [8] see Donop, Mark

Cordell, Ann (Florida Museum of Natural History)

[293] *Colonowares of the Apalachee Province of La Florida*

Colonowares of the Apalachee Province of La Florida consist of plain and red painted pottery made in European vessel shapes by Apalachee potters between 1650 and 1702. This pottery, also known as "copy wares" or "mission ware," represents hybrid products of transculturation that show elaboration or syncretization, in which newly introduced European vessel shapes provided the inspiration for vessels made by Apalachee potters using traditional materials and methods. Typical colonoware vessel forms at San Luis include brimmed plates and bowls with foot-ring bases, cups, pitchers, and storage jars with handles, candlestick holders, and long-handled skillet forms. It is presumed that this pottery was made at the instigation of the Spanish missionaries to supplement imported Hispanic-tradition tablewares that may have been in short supply. Vessel form distinguishes this pottery from most other colonowares from British colonial sites and Spanish colonial Hispaniola. Studies of colonowares from Mission San Luis de Talimali in Florida show that there is continuity with traditional Apalachee pottery in terms of indigenous materials and manufacturing techniques. This colonoware potting tradition was carried on when many San Luis Apalachee residents fled to Old Mobile in French colonial Louisiana in 1704.

Corl, Kristin (New Mexico State University)

[239] *Zooarchaeological Evidence of Human Niche Construction at Cottonwood Spring Pueblo (LA 175)*

Cottonwood Spring Pueblo (LA 175), an El Paso Phase (A.D. 1275–1450) horticultural village in southern New Mexico is one of the largest pueblos in the region. Understanding what animal communities were included in the subsistence strategies people living in this village used will aid in understanding strategies that people relied upon to support a large population in the northern Chihuahuan Desert. Were prey animals (such as desert cottontails, black-tailed jackrabbits, whitetail deer, mule deer, smaller rodents, or birds) hunted in microenvironments created through various categories of human niche construction? Zooarchaeological data and relative taxonomic abundance revealed three targeted taxonomic groups; rabbits, deer, and rodents. Ethnographic evidence shows that populations of these taxonomic groups increase with the expansion of cultivated fields and other human-disturbed environments. Use of stable carbon isotopes found in lagomorph bones provides a robust measure of the environment jackrabbits and cottontails are living in by measuring what plants were incorporated into their diet. Results show that the increased C4 values found in cottontails is evidence that the environment surrounding the pueblo had been modified compared to the larger ecosystem. This evidence suggests targeting of certain species through various intensities of human niche construction.

Correa Gurrulat, Itaci (Universidad de Buenos Aires), Francisco Gallardo (Center for Intercultural and Indigenous Studies, P), Mauricio Uribe (Universidad de Chile), Michael Glascock (Archaeometry laboratory, University of Missouri Re) and Matt Boulanger (Archaeometry laboratory, University of Missouri Re)

[57] *La cerámica de los túmulos funerarios de la costa árida del Desierto de Atacama, Chile. Química, circulación e intercambio entre interior y costa*

Beginning from 2,500 years B.P., coastal inhabitants of Antofagasta region began involved in the general Formative process of northern Chile. Despite their subsistence strategies remained based on hunting, fishing, and collecting marine resources, some aspects of their material culture show notorious changes, as it happens with the developing of burial mound cemeteries. The offerings recorded at the graves suggest exchange intensification with other social groups. Significantly, between these offerings, we recovered ceramic vessels and fragments not previously known for this coastal population. Recent neutron activation analyses carried on 68 ceramic fragments and six clay samples obtained from the coastal mounds and from other funerary and domestic contexts at inland sites from Antofagasta and Tarapacá regions, together with traditional ceramic analyses permits us to evaluate with whom the coastal products/ceramic vessels exchange was articulated during the period. Also, these analyses provide the identification of the main distribution circuits, some of them to great distances. Furthermore, with these results we are able to discuss which ceramic types were preferred by the coastal inhabitants and to what uses this new technology was put to.

Cortegoso, Valeria [139] see Franco, Nora

Coschino, Francesco [147] see Stewart, Marissa

Cosgrove, Richard [295] see Haberle, Simon

Costa, Benilde [145] see Wagner, Ursei

Costello, Laura (Peabody Museum of Archaeology and Ethnology, Harvard University), Patricia Capone (Peabody Museum of Archaeology and Ethnology), Meredith Vasta (Peabody Museum of Archaeology and Ethnology) and Diana Zlatanovski (Peabody Museum of Archaeology and Ethnology)

[265] *Research at the Peabody Museum of Archaeology and Ethnology, Harvard University*

Founded in 1866, the Peabody Museum of Archaeology and Ethnology at Harvard University is one of the oldest museums in the world devoted to anthropology. It is dedicated to the care, study, and long-term preservation of one of the largest and finest collections of cultural history found anywhere. A primary tenet of the Peabody Museum's mission is to support the study and interpretation of its 1.2 million objects and archival collections in the service of research, teaching, publication, exhibition, and artistic endeavors. The Museum's utilization of digital inventory techniques has improved accessibility of collections to various stakeholders and audiences refocusing research questions and enhancing public education. Examples of recent projects involving the collections include: public archaeology of Harvard Indian College, collaborative conservation and analysis of ethnohistoric Alaskan kayaks, and research publications providing refreshed interpretations. Learn more about significant Peabody Museum collections, which include: extensive archaeological documentation of the Maya, comprehensive collections of North American archaeology and ethnology including surviving Native American objects obtained by Lewis and Clark, over 5,000 ancient Peruvian textiles, rare ethnographic objects from the Pacific islands and Africa, photographic archives documenting indigenous cultures across the globe, and unique personal papers documenting the history of anthropology and archaeology.

Cotom, Julio [96] see Hiquet, Julien

Covert, Alexandra (Petrified Forest National Park)

[268] *From Ocean to Desert: Analysis of Prehistoric Shell Through Type, Use, and Trade Routes to Petrified Forest National Park*

Shell jewelry at Petrified Forest National Park has been found from Basketmaker II through Pueblo IV. Since there are no local sources of marine shell, it is important to understand how trade routes from the Gulf of California and the Gulf of Mexico directly affected how shell was traded to this region. Shell recovered from archaeological contexts curated in the Petrified Forest National Park collections were typed according to class, genus, and species and were sourced to the Gulf of California or the Gulf of Mexico. This analysis was conducted to determine if the use of shell was dependent on the type of shell or its procurement location. A literature review was then conducted to determine possible trade routes from both the Gulf of California and the Gulf of Mexico to Petrified Forest National Park. Ultimately, this project will enhance the understandings of shell use and procurement on the Colorado Plateau.

Covey, R. Alan [198] see Weinberg, Camille

Covey, R. Alan (University of Texas at Austin) and Kylie Quave (Beloit College)

[198] *Multiscalar Analysis of an Early Rival to Inca Power*

Systematic regional survey research identified Yunkaray as a town at the center of a hierarchical network of villages near Maras, approximately 20 km to the northwest of the Inca capital. A grid of more than 80 intensive collection units established Yunkaray to be larger than 20 hectares, almost all of which was occupied and abandoned during the Late Intermediate Period (c. A.D. 1000–1400). The scarcity of Inca imperial pottery in surface collections suggested that abandonment occurred during the early period of Inca state expansion, after A.D. 1200. In 2015, we directed excavations at Yunkaray to study life at the center of a polity that competed for a time with the growing Inca state. Our excavations identified households and plazas, revealing aspects of daily life and social organization at a time of regional political and economic competition. As a town first settled around A.D. 1000, Yunkaray contrasts with other large valley-bottom settlements in the Cusco region, where Late Intermediate Period prominence followed centuries of occupation. The abandonment of Yunkaray also contrasts with Cusco, a center that continued to grow as it conquered, becoming an imperial capital.

Cowan, Jason [155] see Hulse, Eva

Cox, Samantha [76] see Retamal, Rodrigo

Cox, Alexandra (Humboldt State University)

[110] *Analysis of Trinidad Cross Artifact*

Within its collection, the Trinidad Museum has an artifact that consists of three individual wood pieces that are believed to be the remnants of the original wooden cross erected by the Spanish in 1775 on Trinidad head in northern California. The Trinidad Museum was uncertain as to the validity of this claim and so a thorough investigation of the artifact was undertaken to determine if in fact these wood pieces are indeed the remnants of the original Spanish wooden cross. A number of methods were employed, including physical analysis and ethnographic research, to try and solve this mystery. The physical analysis consisted of a dendrochronological examination done by Allyson Carroll of the Humboldt State University Department of Forestry and Wildland Resources as well as an analysis of the nails embedded in the wood. Ethnographic research consisted of backtracking the history of the artifact itself through historical documentation. All evidence gathered has yielded positive results in that the artifact is possibly the remnants of the original Spanish wooden cross.

Cox, Maria (California State University, Chico), Valerie Sgheiza (California State University, Chico) and Kelsie Hart (California State University, Chico)

[286] *A Comparison of Two Late Woodland Features: Helton 20-36 and Carter 2-15*

While the structure of Middle Woodland (2050–1600 B.P.) burial mounds from the lower Illinois River valley (LIV) is widely understood in terms of ramps, tombs, and peripheral interment facilities, those for the subsequent Late Woodland Period (1600–1000 B.P.) remain poorly characterized. To illustrate commonalities between Late Woodland sites from the LIV, we here compare Feature 36 from Helton Md 20 and Feature 15 from Carter Md 2. The detailed excavation notes from the Helton excavation are used to inform the Carter context, which was recorded less extensively. We here report the biased demography recorded for both features and discuss the nature of the extended funerary rituals evident in body processing. The complex nature of both features reflects the evolution and diversification of mortuary practices during the Late Woodland Period in the LIV.

Crabtree, Pam (New York University)

[176] *Background to New Methods in Zooarchaeology: Identifying, Storing, and Recording Faunal Collections that will be used by Other Researchers*

In the past 15 years, we have seen significant methodological developments in zooarchaeology, including the uses of isotopic studies, aDNA, and geometric morphometrics. However, all of these methods depend on careful identification of animal bone materials and the preservation of their archaeological and stratigraphic context. This paper discusses basic methods of identifying, recording, archiving, and storing zooarchaeological collections in ways that will make them amenable to research by colleagues and future scholars.

Craib, Alexander (University of Tennessee - Knoxville), Martin P. Walker (University of Tennessee - Knoxville), David G. Anderson (University of Tennessee - Knoxville), Derek Anderson (Mississippi State University) and Stephen Yerka (University of Tennessee - Knoxville)

[98] *Uncovered Features: A Spatial Analysis of Late Woodland to Historic Activity Areas at the Topper Site (38AL23)*

Multiple features, ranging from the Woodland through Historic periods, were uncovered and excavated at the Topper Site (38AL23) by the University of Tennessee, Knoxville, summer 2015 field school. This paper presents the results of a contextual and spatial analysis of these features utilizing excavation and GPR data from the field and the flotation analysis of the feature fill, which was conducted at UTK during the fall of 2015. This analysis further illustrates the range of human activity at the Topper Site.

Craig, Lorena [175] see Law, Karly

Craig, Lorena (University of Montana)

[289] *Dynamics of Adaption and Diversity: A Phylogenetic Analysis of Material Culture from Fremont Archaeological Sites.*

This study uses phylogenetic analysis to examine the dynamics of cultural evolution on material culture. The hypotheses assert that variation in material culture is significantly influenced from nearness and interactions with neighbors, impacts of local environments, and adaptation through distance in time and geographic space. However, cultural transmission processes occur differently for various types of cultural material and/or traditions. By using phylogenetic analysis of several types of material culture—such as architecture, pottery, lithics, and basketry—allows for a more fine grained analysis of cultural evolutionary processes. Published material culture data from selected Fremont archaeological sites, dated 400 C.E. to 1300 C.E., will be used for analysis. An evolutionary framework for analyzing variation in material culture permits a highly integrative approach to cultural material studies. This study adds to the growing body of knowledge of evolutionary processes and to the study of the Fremont archaeology.

Cramb, Justin (University of Georgia)

[182] *An Archaeological Pilot Study on Manihiki and Rakahanga, Two Remote Atolls in East Polynesia.*

Here, I report the findings of a 2015 archaeological and oral-history based reconnaissance survey of two remote Oceanic atolls. Manihiki and Rakahanga are located in the northern Cook Islands of east Polynesia. This dual island system has been the subject of few systematic archaeological studies. Yet, the existing data for the atolls suggests that they may be ideal for the archaeological study of the social-ecological dynamics of sustainability and resilience in small island environments. My fieldwork was structured as the first stage of a long-term research program on the atolls, and was aimed at the discovery of archaeological sites via informant interviews and archaeological surface survey. This research resulted in the creation of a GIS database of all known sites on Manihiki and Rakahanga and in the identification of multiple habitation sites that will be targeted in future excavations. Furthermore, this research provides some initial insight into settlement patterns, resource use, and the connections that may exist between oral histories, myths, legends, and real-world phenomena. The continuation of this research aims to understand the complexities of life on the atolls as well as the social-ecological interactions that have facilitated the long-term occupation of Manihiki and Rakahanga.

Crandall, John (University of Nevada, Las Vegas)

[24] *An Exercise in Raw Power: A Bioarchaeological Perspective on American Violence & Westward Expansion*

Bioarchaeologists have rarely marshalled data from historic American burial assemblages to explore the dynamics of violence in the borderlands west. This paper considers the social dynamics of American violence under Manifest Destiny through an exploration of ballistic trauma patterns documented in extant historical bioarchaeology literature. This study examines the lives of 42 individuals whose remains exhibit fatal gunshot wounds from across the mid-seventeenth and early twentieth century America. Trauma data were historically contextualized and compared between region, age group, sex, race, class, and occupation. Available data challenge prevailing ecological models in which violence results from the 'social disorder' of single male settlers living in dense boomtowns. Skeletal trauma is found only among rural and pioneer families in the west. Most shootings occur as a result of political massacres and ambushes. 38 percent of injuries occur as a result of racial or religious conflicts. No victim on the frontier is middle- or high-class. Shootouts, and the subsequent treatment of victim's bodies, pattern along racist, classist, gendered, and protestant lines rather than being senseless. As President Barack Obama has observed, borderland violence is best seen as an "exercise in raw power" that transformed competing frontier communities into citizens within America's social hierarchy.

Crandall, James (University of Florida)

[196] *Household Practice and Spatial Fashioning in the Chachapoya Community of Purunllacta de Soloco*

For the Chachapoya of the eastern Andes, the household was a primary social space of production and community life. In order to examine the maintenance of such social spaces, this paper analyses the material continuity of household spatial production in the upper Amazonian community of Purunllacta de Soloco occupied between A.D. 400–1583. Many Chachapoya houses were continually inhabited and were refashioned according to a schema indicated by a particular material assemblage. I identify long-term continuities and changes in the production of social space and household practices through an analysis of the internal divisions of Chachapoya houses. The results indicate that the production of household spaces remained uniform while a particular localized style of Chachapoya architecture arose during the Inka and early Spanish colonial periods.

[196] *Chair*

Crane, John [208] see Cannon, Kenneth

Crane, Brian

[293] *Beyond Ethnicity: Compositional Analysis and the Manufacture and Trade of Colonoware*

Hand-built, low-fired pottery from South Carolina exhibit a sometimes bewildering degree of heterogeneity. Analysis of vessel form, construction technique, temper inclusions, chemistry, and surface treatment suggests a broad range of practice and potential cultural influence. Colonoware vessel forms and surface treatment display a complex blending of traditions that arose from the entangled lives of Africans, Native Americans, and Europeans and reveal something of the complex cultural relationships within which colonowares were manufactured, traded, and used. But while discussion of the elements of vessel form and surface treatment has been extensive, compositional analysis remains very limited. Neutron activation analysis (NAA) conducted on South Carolina colonowares excavated in and near Charleston displayed a high degree of heterogeneity while also finding chemical similarities that crosscut visual types. This is not unexpected, as historical references mention itinerant potters making and selling pots as they traveled across South Carolina. Since vessel chemistry will relate to the place that clay for a pot was procured rather than who made it, NAA offers one way to move beyond the ethnicity debate and explore the manufacture and trade of colonowares as they fit into local communities and the broader plantation economy.

Cranford, David (UNC-Chapel Hill)

[293] *Trends and Techniques of Catawba Colonoware, ca. 1760-1800*

While superficial similarities exist among colonoware assemblages produced by different communities of potters, owing to shared colonial templates, this ceramic tradition, like any other, reflects the specific economic and social contexts in which it is produced, circulated, and used. By the nineteenth century, Catawba potters were well-known producers and itinerant traders of low-fired earthenware across South Carolina, but the origin and character of early Catawba colonoware production has not been well understood. Archaeological investigations at a series of mid to late eighteenth century Catawba settlements have revealed the rapid adoption of European inspired forms and decorations as well as the process of experimentation that shaped the Catawba ceramic repertoire in the decades that followed. This paper presents an analysis of the earliest documented Catawba colonoware, dating from ca. 1760 to 1800, and highlights the changes and modifications that took place within this relatively short time horizon. Finally, I discuss the implications of this case study for contextualizing colonoware more broadly.

Crawford, Sally (Institute of Archaeology, University of Oxford)

[25] *What If Children Lived Here? Asking New Questions of the Material Culture from Old Anglo-Saxon Settlement Excavations*

It has been incredibly difficult to identify children's material culture in the archaeological record using the standard parameters of the last century—is it miniature? Does it look like a (modern) toy? Was it found actually buried with an actual child? But recent developments in the theory of the archaeology of childhood, particularly in relation to children's toys, play spaces, and activities, offer new ways of asking questions of objects to reconsider whether they might be child-related, starting from the premise that there were always more children than adults in the past, and that children did intersect with the archaeological record. In this paper, I will be reconsidering the material from some excavated Anglo-Saxon settlements in the context of these new theories to see whether the range of objects which might be classed as child-related might now plausibly be extended.

Crawford, Laura (The Ohio State University), Claire Alix (Paris-Sorbonne University) and Nancy Bigelow (University of Alaska Fairbanks)

[124] *Thule Fuel Use at Cape Espenberg, Alaska, C.E. 1500-1700*

We examined fuel use practices at Cape Espenberg, Alaska, between 1500 and 1700 C.E. We identified charcoal remains from two Thule-era houses of different ages and analyzed our results with univariate statistics. Results suggest that Cape Espenberg's inhabitants were selective in choosing fuels, and discerned between different woody species, perhaps according to combustion properties. Furthermore, there appears to be a greater reliance on lesser-used fuel types in the younger of the two houses. This is significant, as it has been suggested that declining driftwood supplies contributed to the abandonment of Cape Espenberg. We suggest that the inhabitants of the younger house may have been actively conserving woody fuel, perhaps due to lesser access to driftwood resulting from climate change.

Crawford, Dawn (Southern Methodist University) and Brigitte Kovacevich (University of Central Florida)

[235] *Preliminary Obsidian Analysis for the Site of Holtun, Petén, Guatemala 2011-2015*

Holtun is a medium-sized civic-ceremonial center located in the Maya Lowlands in the central lakes region of Petén, Guatemala, that was occupied from the Preclassic (~600 B.C.) through the beginning of the Postclassic (A.D. 1000). During the 2011, 2014, and 2015 field seasons of the Holtun Archaeological Project, approximately 147 pieces of obsidian were recovered from a mixture of contexts including fill, plaza, ceremonial, and household. Analyses of obsidian artifacts included typological analysis, weight, and measurement, preliminary visual sourcing, and indices of invasiveness, followed by chemical characterization using portable X-Ray Fluorescence (pXRF). This poster presents the preliminary results of data collected for the obsidian from Holtun between 2011 and 2015 with the goal of further understanding access and distribution through time and across various contexts of the site. Preliminary analysis suggests San Martín Jilotepeque as the dominant obsidian source in the Preclassic Period at Holtun, followed by a replacement by El Chayal as the dominant source during the Classic Period.

Creager, Brooke (University of Minnesota)

[70] *Colonization or Migration? Applying Colonial Theory to Post-Roman Britain*

Colonial studies has long ignored early medieval Britain. However, thanks to archaeology, it is possible to reconstruct enough conditions of the fifth and sixth centuries to understand the impact of the multiple colonizations. England experienced two distinct occupations by foreign parties before the Norman Conquest: the expansion of the Roman Empire into Britain ending in 410 A.D. and the Anglo-Saxon migration beginning in the mid-fifth century. Neither of these occurrences has been discussed using colonial and post-colonial theory. This paper will consider the lingering impact of the Roman occupation on Britain in the decades preceding the Anglo-Saxon migration. Similar to the cases of India, Britain retained traces of a foreign culture long after the departure of the occupying political force. What makes these two events important in colonial studies is that there was very little time between them and there is evidence of residual Roman practice into the period of Anglo-Saxon occupation. The confluence of a post-colonial society becoming recolonized by a new group in the space of only a few decades is distinctive. This paper will apply colonial and post-colonial theory to fifth and sixth century Britain to examine the cultural environment that the Anglo-Saxons would have encountered.

Creel, Darrell [267] see Romero, Danielle

Creese, John (North Dakota State University)

[18] *Late Archaic Body Worlds: Some Preliminary Thoughts*

The Terminal Archaic (ca. 4000–3000 cal. B.P.) marked an important turning point in the upper Midwest. New relationships among persons, landscapes, and material culture emerged that, in many ways, set a pattern for the next two millennia. This paper makes a preliminary effort to interpret these changes in terms of shifting ontologies of the body. Of particular interest is the emergence of clear spatial divisions between the living and the dead on the landscape. Other patterns include the elaborate development of the body as a site of (often) gendered display, and structured deposits which fall into the categories of nets (unique collections of functionally diverse, exotic, and esoteric objects) and sets (caches of self-similar objects, usually biface cache blades). These developments will be considered from a broadly relational standpoint in an effort to trace the connections among materials, landscapes, and bodies that were articulated in Terminal Archaic depositional practices.

[248] *Discussant*

Crellin, Rachel (University of Leicester (UK)) and Mark Purnell (University of Leicester (UK))

[214] *Towards a Quantitative Analysis of Aronze Axe Metalwork Wear*

Bronze axes are arguably the most important objects of study for understanding the start of metallurgy in Europe; a process of material transformation that irrevocably altered the prehistoric world. Yet we cannot accurately answer the simple question 'what were bronze axes used for'? This paper aims to begin to establish more clearly the way that wear develops on the blades of bronze axes. Existing studies in metalwork wear analysis have relied on qualitative analysis of replicas used in a limited number of experiments primarily focused on tree chopping and felling. We report on a new experimental analysis in which axes are used for a range of different tasks involving different worked materials. Quantitative analysis of surface texture using focus variation microscopy (Alicona Infinite Focus microscope) was carried out before, during, and after the experiments in order to test the hypothesis that working different materials generates significant differences in wear textures and to establish how wear patterns develop over time. The results increase our understanding of how wear develops with use, and reveal the relationship between the parameters that quantify the texture of the worn surface and the nature of the worked materials.

Cremonte, Maria, Clarisa Otero (CONICET, Universidad Nacional de Jujuy) and Catriel Greco (CONICET, Universidad de Buenos Aires)

[259] *Re-thinking Social and Chronological Palimpsest. Inka Domination in Quebrada de Humahuaca (Jujuy, Argentina)*

In recent years, the scenario of Inka conquest in the Quebrada de Humahuaca includes different social landscapes that can't be explained by traditional positions. These new perspectives have been improved by contributions from other regions of northwestern Argentina and Collasuyu. In the case of Quebrada de Humahuaca, a region with a lack in early historical sources, the archaeological visibility of processes of social dynamics and handcraft production requires constant methodological challenges. From this perspective, we believe that in the mosaic of the Inka state policies implemented in the provinces, it is necessary to outline macro-regional common paths, as well as taking into consideration different stages in the annexation process. Over a palimpsest of local and relocated ethnic groups, of which little is known of their previous political organization, the agency of each group against imperial requirements had to be very diverse. During a period extending from the first half of the fifteenth century until the seventeenth century, with continuations in the patterns of domination even when the empire was gone, we seek to understand the complex local histories breaking down this chronological continuum.

Cressey, Pamela (the george washington university)

[48] *Discussant*

Cressler, Alan [131] see Yerka, Stephen

Crist, Walter (Arizona State University)

[224] *House Rules: Cultural Transmission and Egyptian Senet Games*

Egypt has long been the focus of research on ancient board games, as it provides the longest history and greatest variety of games in the ancient world. Despite this, limitations on archaeological interpretation exist because of the unprovenanced nature of the material, as well as a focus on games from tombs of the nobility and pharaohs. Increasingly, evidence from within Egypt in the form of graffiti games on monuments and on ostraca, as well as Egyptian games found in the Levant where Egyptians were active economically, suggest differential understandings of the game across cultural and socio-economic boundaries.

The game appearing most often in the Egypt and the Levant, senet, is perhaps the best-known game of antiquity and provides multiple variations in morphology that suggest differential meanings for the game between elites, non-elites, and foreign players. Examination of the particular features of the games, informed by cultural transmission theory, will help to explain some of the mechanisms by which people played games with one another to cross social boundaries. Since games' liminality allows for interaction across boundaries, examining the ways games change as people adopt them across those boundaries helps to illuminate the kinds of interactions that took place.

Crites, Gary [225] see Baumann, Timothy

Crock, John [218] see Robinson, Jess

Crock, John (University of Vermont), Nanny Carder (University of Vermont) and Sebastián Castro (University of Vermont)

[222] *"Marineness" and Variability in Maritime Adaptations in the Late Ceramic Age Northern Lesser Antilles*

Archaeological investigations in the northern Lesser Antilles have demonstrated Amerindians' dependence on marine foods and maritime exchange

throughout the Late Ceramic Age. While these data confirm the assumption that small island populations were, by necessity, maritime adapted, they also reveal subtle variability in the degree to which islanders' depended on marine resources and the extent to which they engaged in interisland exchange networks. We use environmental and archaeological data to discern degrees of "marineness" and explore potentially meaningful variability in the maritime adaptations of Late Ceramic Age populations in the northern Lesser Antilles.

Croes, Dale (Washington State University) and Ed Carriere (Suquamish Tribe)

[63] *Re-Awakening a 2,000 Year Old Salish Sea Basketry Tradition: Master Salish Basketmaker and Wet Site Archaeologist Explore 100 Generations of Cultural Knowledge*

I often invited Ed Carriere, Suquamish Master Basketmaker and Elder, to help us recover 700-year-old cedar bough pack baskets while excavating the Qwu?gwes wet/waterlogged site, Olympia, Washington. He is the last known Salish Sea weaver still making these cedar clam baskets. While preparing to analyze 2,000-year-old Biderbost wet site pack baskets at the U.W. Burke Museum in Seattle, I called Ed and suggested he try to replicate these baskets, fully 100 generations back through his line of teachers. He loved the idea and we got expense funds to do the project through his Tribe's Suquamish Appendix X grants. We met several times at the U.W. Burke and he recognized two main types of large pack baskets, one open twined and one checker plaited. Kathleen Hawes, a cellular ID expert, determined most of these ancient baskets were made from split cedar root. Ed has now replicated three of the fine gauge open twine pack baskets, contributing a huge amount to our analysis in the process. Ed guided me through the process of making two of the checker weave examples. Together we will present what we have learned through this experimental archaeology and cultural experiment.

Crombé, Philippe (Ghent University, Department of Archaeology)

[211] *Human Response to the Younger Dryas and 9.3 ka Event along the Southern North Sea basin: A Comparison*

Besides the climatic deterioration, both the Younger Dryas (starting with the IACP or GI-1b) and the 9.3 ka event severely affected hunter-gatherer's environment. Along the southern North Sea Basin (northern France, Belgium, the Netherlands) both climatic events are connected with increased and repeated forest fires of large stands of pine forests and major drops of the water level in rivers, lakes, and ponds. In this paper, we will investigate how this changed environment conditioned hunter-gatherer's life and whether there was a differential response between the YD and the 9.3 ka event. Recent research indicates a marked change in settlement density, hunting equipment, lithic technology, and raw material distribution in response to these climatic and environmental events.

Crones, Charles and Michael Heckenberger (University of Florida)

[263] *From Maps to Lives: Participatory Archaeology and the Fate of the Amazon in the Digital Age*

The collaborative turn in archaeology has had important impacts on Amazonian research over the past several decades. It uses participatory research strategies and public archaeology to promote inclusive research partnerships. One aspect of collaboration that is still seldom addressed is the use of digital technology in archaeological analysis and dissemination. The Xingu project, which included local digital documentation and video and a long-standing project of archaeological GPS mapping and testing with descendant groups, provides an exceptional setting to develop co-produced graphic digital representations. This paper discusses the rationale and results of this in developing an interactive GIS, in association with the current Kuikuro Cultural Center project.

Cross, Benjamin (University of Memphis)

[6] *Analyzing the Use of Inter-Structure Space at Ames, a Mississippian Town in Fayette County, Tennessee*

Ames (40FY7) is an Early-Middle Mississippian Period town with two dozen structures, four mounds, and plazas enclosed within a palisade located in Fayette County, Tennessee, which dates to A.D. 1050–1300. Very little research has been done on Early-Middle Mississippian settlements in West Tennessee; this has resulted in very little being known about the social life history of these sites. Recent research at Ames has utilized multiple lines of evidence such as magnetometry data, surface collections, and excavation to determine the function and organization of space throughout the site.

Crow, Kaitlin [235] see Powis, Terry

Crowley, Erin

[70] *Beyond Romanization and Colonialism: Roman Influences in Ireland*

Currently, models of colonial theory are being broken down with better understandings of fluid frontiers and more complex systems of culture contact. These new frameworks offer greater insights into how groups interact and provide us with a substantial platform on which to discuss nuanced exchange networks. With recent renewed interest in exchange during the Late Iron Age in the British Isles, there has been greater advanced scholarship in our understanding of interactions between Rome and Ireland, not however within a colonial framework. During this period, new types of material culture were formed and flourished, a new literary tradition developed, and new religious practices took root. In the Late Iron Age, Ireland remained outside of Roman political control but not necessarily outside the sphere of Roman cultural influence. This paper reassesses cultural and social interaction across the Irish Sea, engaging with the Roman material and vestiges of Roman culture present in the Irish archaeological record. By using a colonial model, we gain greater insights into Late Iron Age Ireland as well as open up discussions of colonialism and culture contact in non-modern contexts.

Crowther, Alison (University of Queensland), Nicole Boivin (University of Oxford), Leilani Lucas (University College London), Henry Wright (University of Michigan) and Chantal Radimilahy (Musée d'Art et d'Archéologie, l'Université d'Antan)

[223] *Anthropogenic Plant Translocations in the Western Indian Ocean: Archaeobotanical Perspectives on the Anthropocene from Madagascar and the Comoros*

Although Madagascar is probably best known for its unique endemic flora and fauna, humans have also played a key role in shaping biological diversity on the island. Indeed, it is estimated that humans have been responsible for the introduction of some 10 percent of Madagascar's flora in the centuries since the island was first colonised. For many of these plants, the precise dates of introduction are unknown; and, while many are undoubtedly relatively recent introductions, a number are suggested to have arrived through early Indian Ocean migration and trade from regions as far flung as island southeast Asia—the genetic and linguistic homeland of the Malagasy people. In this paper, we outline current evidence from Madagascar as well as the nearby Comoros islands for a range of translocated plants, including key food crops such as rice, banana, taro, and yam, as well as several lesser-known taxa from Asia that have potentially long histories of human-mediated dispersal to the region. These plant introductions form part of a larger anthropogenic re-shaping of Madagascar's ecology, that also included extensive deforestation and probably megafaunal extinctions, and whose systematic investigation remains in its

infancy.

Crowther, Alison [223] see Prendergast, Mary

Crumley, Carole (Dept of Archaeology and Ancient History, Uppsala University, Sweden)

[138] *Into International Waters*

The remarkable career of Vernon Scarborough includes a long, lesser-known association with international programs of significance to archaeology and anthropology. Drawing on the meticulous investigation of Maya water management strategies, Vern has taken that interest to the global level, working in south Asia, Sri Lanka, Greece, Bali, and the American southwest. His has been an important and persistent voice in the global change community for a quarter century, leading an enormous project on the history of water for UNESCO and as an early member of the Integrated History and Future of People on Earth (IHOPE). His far-ranging intelligence, immense curiosity, and warm personality have gone far in convincing the global change community of the utility of the past for the future.

Cruz, Pablo (CONICET-IIT-UBA) and Christian Vitry (Universidad Nacional de Salta)

[259] *The Mineral Heart of Tawantinsuyo: Metal Production, Power and Religiosity in Qollasuyo*

Expansion into the Andean Highlands located to the south of Cuzco was a movement of capital importance in the consolidation of the Tawantinsuyu. This southward extension permitted the Incan annexation of important political and religious enclaves, like those located on the shores of Lake Titicaca. That region is identified by various colonial sources as the place of origin of the Incas themselves. However, beyond this, expansion of the empire to the south provided access to the gold, silver, and copper mineral deposits in the region, including the most important ones in the Andes. Access to these deposits entailed the disclosure of sophisticated metallurgical knowledge and technologies that had been developed by the local populations of the area. In this presentation, we articulate archaeological data from different regions of Bolivia (Oruro, Potosi, Lipez) and the north of Argentina (Salta, Jujuy) with information provided by colonial historical sources in order to highlight and characterize the relations connected to metal production, power, and religion in Qollasuyo, and their expression in the Incan sanctification of mineral mountains in the region.

Cruzado Carranza, Elizabeth [206] see Connolly, Robert

Cruzado Carranza, Elizabeth (University of Memphis)

[276] *Characterizing the Mortuary Practices in Hualcayán, Ancash, Perú: Analysis of the Content and Distribution of Artifacts in Funerary Contexts*

In prehistory, the Peruvian Highlands contained a complex array of mortuary practices through space and time. In the Ancash region at the site of Hualcayán, several funerary contexts have been excavated since 2011 that demonstrate this variation in mortuary practices between 250 B.C. to A.D. 950. This paper presents the results of a study of the archaeological materials excavated from six tombs at Hualcayán, that include the analysis of decorated ceramics, botanical, and faunal remains, lithics, soil samples, and other artifacts. The study reports the entire analysis of excavated materials from the chambers of the six tombs. This complete analysis of recovered cultural materials forms the basis for a model of the content and distribution of the types of mortuary settings at Hualcayán and their variations through time and space.

Cruze, Zackery (Prentice Thomas and Assoc)

[213] *From Jake's Point to Bay Point: Investigations of a 19th Century Lumber Mill*

Located along the western bank of the Blackwater River in Santa Rosa County, Florida, lie the remains of a once active and flourishing lumber mill and associated company town, known as Bay Point Mill of Pinewood, Florida. The abundance of yellow pine lumber and multiple waterways necessary to produce water power and provide a means of transport for timber allowed the region of northwest Florida to become an ideal location for the development of the lumber industry, growing to comprise over one hundred mill sites.

While not the oldest mill in the area, or the largest, smallest, or most complex, Baypoint Mill was unique and distinct from the other local mills in that the location of the saw mill machinery sat upon an artificially constructed landform of brick, French terracotta roofing tile, and ballast stone which all rest approximately one hundred meters offshore within the Blackwater River. Additionally, beginning in the late 1880s, ownership of the mill passed through the hands of a number of Italian brothers from multiple families. This paper demonstrates the impact upon which Italian ancestry played upon the structural design, location, and operations of a southeastern American sawmill.

Cuevas, Mauricio (Universidad Veracruzana)

[216] *Rutas y caminos de los sitios costeros de la Sierra de Santa Marta en el Clásico tardío, una propuesta teórico- metodológica*

Esta ponencia se centra en la reconstrucción de las vías de comunicación en la zona costera de la Sierra de Santa Marta al Sur del Estado de Veracruz. Presenta una nueva manera para poder reconstruir el paisaje comunicacional del área, mediante la aplicación de un esquema de comunicación combinando los estudios de arquitectura para el periodo Clásico tardío del área con el uso de programas SIG. Es presentado como un trabajo perfectible en el sentido que pudiera ser aplicado para reconstruir rutas a lo largo del territorio de Los Tuxtlas, inclusive de Mesoamérica.

Culleton, Brendan [129] see Hernandez Sarinana, Daniela

Cuneo, Allison (Boston University) and Michael Danti (American Schools of Oriental Research - Cultural H)

[12] *The Rowanduz Archaeological Program - Results from the 2015 Field Season*

This talk presents the results from the third seasons of archaeological investigations conducted by the Rowanduz Archaeological Program (RAP) in Erbil Province in northeastern Iraqi Kurdistan. During the Late Bronze and Early Iron Age, the project area, the modern Soran District, served as an important buffer zone between the Assyrian and Urartian Empires, and scholarly consensus locates the Hurro-Urartian buffer state of Ardini/Musasir in this rugged

mountainous region, best known for its sacking during Sargon II's Eighth Campaign in 714 B.C.E. In the fall of 2015, RAP conducted archaeological investigations in the areas of modern Sidekan along the Iraq-Iran border in the Zagros Mountains. This season focused on excavations at the threatened cemetery of Ghabrestan-i Topzawa in the Zagros Mountains near modern Sidekan, where an Achaemenid Period tomb was investigated, and the site of Gund-i Topzawa, an early Iron Age settlement situated near the original location of the famous Topzawa Stele. A complementary cultural heritage management program, focused on improved communication with local stakeholders, was also implemented during the 2015 season. The results of this heritage project and long-term management plans for the Topzawa sites will be discussed within the context of the excavation results.

Cuneo, Allison [254] see Danti, Michael

Cunha, Eugénia [49] see Umbelino, Cláudia

Cunnam, Geoffrey (WCRM) and Edward Stoner

[123] *Processing, Power, Teaching and Identity, The Utilitarian and Ritual Use of Artifacts from a Middle Archaic Shaman's House in the Great Basin.*

In 2013, Western Cultural Management excavated a well preserved structure in the Great Basin. The structure dates to 3000 cal. B.P. and is one of few that have been discovered of this antiquity in the Great Basin region. The house was associated with a number of artifacts. Many of the tools were clearly associated with artiodactyl processing tasks within discrete activity areas. Other artifacts such as complete bi-point knives, complete projectile points, quartz crystals, fulgurites, ochre, bone tubes, bone needles, and possible bone strigils are argued to have been associated with shamanistic behavior, teaching, and expressions of identity. In this paper, the use-wear evidence and tool morphology is discussed in the context of the roles the shaman may have had in the ancient community.

Cunningham, Jerimy (The University of Lethbridge)

[275] *Discussant*

Cunningham-Smith, Petra (University of Florida)

[134] *A Preliminary Isotopic Investigation into Ancient Maya Fish Trade*

The ancient coastal Maya fished for food and trade to the heavily populated cities that lay many miles inland. At these inland cities, marine fish were an elite and symbolic product often included in burials and caches. Although the use of marine resources in both coastal and inland Maya communities has been well documented, actual fishing and trading practices are poorly understood. This paper explores the potential of using stable isotope analysis to answer questions related to the use and trade of marine fish from the Belize coastal and caye communities and their trading partners at near-coastal and inland sites. Tissue and bone samples from modern fish taxa from estuary and marine environments are analyzed for variations in carbon and nitrogen isotopes that may act as signatures of geographic distinctions in marine habitats. Archeological specimens of marine fish from coastal and inland Maya sites are also examined for isotopic variation that may suggest the location of capture of the fish. These baseline data may lead to the identification of important fishing areas and assist in the identification of trade routes between coastal and inland Maya communities.

[134] *Chair*

Cupul Magaña, Fabio Germán [101] see Mountjoy, Joseph

Curet, L. (National Museum of the American Indian, Smithsonian Institution)

[50] *The Archaeological Project of the Ceremonial Center of Tibes: Summary and Recent Discoveries*

This paper summarizes and reviews the results obtained in the past five years of the Archaeological Project of the Ceremonial Center of Tibes. Special attention will be paid to field discoveries, particularly to activity areas and architectural structures. The presentation will also serve as introduction to the rest of the symposium.

[14] *Discussant*

[50] *Chair*

Curet, Antonio [50] see Ambrosino, Gordon

Curran, Joseph

[245] *Blunt Impact: The Role of War Clubs in Prehistoric Californian Warfare*

Conflict archaeology has recently begun to focus on the effect of warfare on hunter-gatherers. A key issue in southern California revolves around the effectiveness of indigenous weaponry. Numerous accounts describe club-like weapons as well as bows and arrows. Little archaeological evidence, however, is available on the role and impact of these weapons on conflict. This paper reports on experiments designed to document trauma inflicted by weapons replicated from archaeological and museum collections. The experiments utilized the weapons on pig carcasses both with and without indigenous armor. Trauma to tissue and bone was recorded and compared with accounts from Europe, the eastern Woodlands, and Polynesia. These data were then used to assess the impact of the weapons on severity of injury and casualties in southern California pre-contact warfare.

Curta, Florin

[161] *The Archaeology of Medieval Nomadism in Eastern Europe (10th-13th Centuries): The Current State of Research*

The vast steppe corridor that begins in north-central China and ends on the middle and lower Danube has been the habitat of many communities of nomads, and the object of intensive archaeological research. Ever since Svetlana Pletneva, research on the late nomads in the steppe lands now within Russia and Ukraine has focused on burial assemblages, especially on burial mounds. However, new lines of research have opened in the last few

decades, which highlight new categories of evidence: stone statues (so-called "kamennye baby"), the influence of Christianity, weapons and horse gear, and camp sites. A Bulgarian scholar has even invented a new word to describe this explosion of research that has focused particularly on the Cumans (eleventh to thirteenth centuries): "Cumanology." In the Republic of Moldova and in Romania, the emphasis shifted from ethnicity to the long-term study of relations between nomadic and settled communities. An even more interesting line of research has focused on those nomads who have moved into the neighboring Byzantine Empire or into Hungary between the eleventh and the thirteenth centuries. Pioneering research in bioarchaeology has only begun to enrich the already complex picture of the archaeology of medieval nomadism in Eastern Europe.

[161] *Chair*

Curtis, David (Yosemite National Park)

[229] *Archaeology in the Wilderness*

Yosemite National Park (California) receives an overwhelming four million visitors per year. While most visitors remain in the developed areas of the park, many people venture forth into the 704,556-acre wilderness areas for recreation and solitude—the sheer frequency of which leads to resource impacts unprecedented in many other wildernesses. In response, park resource managers developed the "Wilderness Restoration Program" in 1987, a program designed to directly mitigate and alleviate the on-going damages incurred by high-volume, heavy-frequency visitation and use in wilderness. The program utilizes an interdisciplinary approach to focus on issues of ecological restoration in cooperation with cultural resource preservation and employs a process of shared scheduling, field collaboration, crew education, data review, and project reporting. In so doing, park archaeology staff have been able to perform site survey and inventory for over 25 years in areas normally inaccessible by funding restrictions, viz. Yosemite's backcountry, and have systematically expanded Yosemite's archaeological record on an annual basis. This unique partnership serves as a model of a successful program that transcends individualistic perceptions of natural vs. cultural resources in order to nurture a more comprehensive management of wilderness character.

Cusicanqui, Solsiré (Harvard University) and Luis Jaime Castillo Butters (Pontificia Universidad Católica del Perú)

[102] *Cajamarcan Presence in the Northern Coast of Peru during the Middle Horizon: A Ceramic Styles Approach*

Around 750 A.D., the Mochica societies occupying the mouth of the Jequetepeque River, in the north coast of Peru, began a brief but intensive collapse process that opened their borders to nearby societies; especially those settled in the highlands of Cajamarca. Materialized in plates made from kaolinite clays, this Cajamarca presence quickly spreads throughout the valley generating different dynamics of cultural interaction reflected in the creation of new ceramic styles ("coastal" cajamarca), the introduction of different funeral patterns in the cemetery of San Jose de Moro, and the presence of cajamarquino groups in the fortified settlement of Cerro Chépén. Through the stylistic, ethnographic, and petrographic studies of the ceramic vessels from the collection of the San José de Moro Archaeological Program and the settlements located in the Jequetepeque Valley, the possible reasons of interaction between these two social groups and the probable impact on the creation and recreation of coastal and highland identities of those who inhabited the northern coast of Jequetepeque between 750 A.D. and 950 A.D. will be described.

Cutright, Robyn (Centre College)

[97] *The Politics of Identity and Affiliation in a Middle Jequetepeque Valley Community*

This paper draws on recent research at Ventanillas, a community in the middle Jequetepeque Valley in northern Peru, to explore how local communities negotiate ethnic identity and political affiliation at the outskirts of large scale polities. On one hand, Ventanillas could be easily understood as the easternmost outpost of the coastal Lambayeque and Chimú states. On the other hand, elite households seem to have been drawing on coastal and highland practices, hosting household-based feasts and other gatherings, and in this context engagement with coastal states may be seen as a locally relevant political strategy. This paper explores how local, rural communities engage with political institutions, and how broader political and religious institutions come to have meaning at the local level.

Cutright, Robyn [102] see Cervantes, Gabriela

Cutts, Russel [177] see Hlubik, Sarah

Cutts, Russell (University of Georgia), David Braun (The George Washington University), Sarah Hlubik (Rutgers University) and JWK Harris

[269] *Excavations at FxJ20Main-Extension-0, A Possible Fire Feature Associated with Oldowan Artifacts at Koobi Fora, Kenya*

Clear evidence of hominin-controlled fire in the Earlier Stone Age archaeological record is sparse. Many indicators used to identify anthropogenic control of fire are not present or do not preserve from Early Pleistocene sediments (e.g. hearthstones, charcoal, ash). The 1972-4 excavations at FxJ20Main and FxJ20East localities of the Okote Mbr. (1.5-1.64 Ma) of the Koobi Fora Fm. recovered sediment features that appear to be reddened by an anomalous oxidation process. These are among the earliest of the open-air localities preserving debated evidence of anthropogenic control of fire. Recent expansions of these excavations (FxJ20Main-Extension-0) recovered similar features to those identified during the 1972-4 investigations. Surface collections and subsequent excavation of the -Ext0 feature during the 2015 season have yielded data suggesting the circular one meter oxidized feature may reflect anthropogenically controlled combustion. Here, we report on initial analysis of potentially heat-altered lithics, spatial analysis of potentially heat-modified materials and sediments, and their association with Oldowan artifacts. We then describe preliminary analysis of a multi-proxy approach to study the anthropogenic nature of these features. These include micromorphology of sediments, petrographic microscopy (PM) of possible heat-altered lithics, Fourier-transform infrared spectroscopy (FTIR), and thermoluminescence (TL) of siliceous artifacts.

Cyphers, Ann [44] see Murtha, Timothy

Cyril, Castanet (University of Paris 8, CNRS UMR 8591 Laboratory of Physical Geography), Purdue Louise (CNRS UMR 7264 Cultures et Environnements, Préhisto), Lemonnier Eva (University of Paris 1, CNRS UMR 8096 Archéologie d), Nondédéo Philippe (CNRS UMR 8096 Archéologie des Amériques, Universit) and Testé Marc (CNRS UMR 8591 Laboratory of Physical Geography, Un)

[96] *Environmental and Socio-Environmental Dynamics in the Subtropical Maya Lowlands: Hydrosystems and Agrosystems of the Wetlands (bajos) around Naachtun*

The eco-socio-system of the wetlands (bajos) situated around the city of Naachtun is studied in relation with the water and soil resources (availability, use, management), between environment, climate, and societies. The objectives are to characterize the evolution of the hydrosystems and agrosystems during

the last three millennia and particularly during the Classic Period. The approach is systemic and multi-scalar, based on interdisciplinary works with geoarchaeological, geomorphological, palaeo-ecological, geomatic, and archaeological components. Fieldwork (coreholes, boreholes) are associated with spatial analysis works (geomatics), with laboratory analysis (sedimentary, geochemical, pedological, bio-indicators, and geochronological analysis) and with the establishment of a frame of reference. Sedimentary records archived within the north bajo of Naachtun have good potential for the reconstruction of the past environmental and socioenvironmental dynamics (thickness, sedimentary facies variability, bioindicators content). Preliminary results indicate that this wetland associate water and soil resources which evolved under climate and anthropogenic controls. During the Classic Period, it was changed for water use and agriculture. The dynamic of this eco-socio-system was one of the factors which controlled the settlement and the development of the city of Naachtun.

Czechowski, Matthias [278] see Meyer, Dominique

Daggett, Adrienne (Michigan State University) and Erica Dziedzic (Michigan State University)

[71] *Dig the Past: Evaluating a Campus-Based Public Archaeology Program*

Over the 2013–2014 academic year, Michigan State University's Campus Archaeology Program facilitated a series of public archaeology workshops called "Dig the Past: A Hands-on Introduction to Archaeology." Targeting both children and adults in the Greater Lansing community, these workshops aimed to disburse fundamental information about the real practice of archaeology in lay-friendly language as well as to provide archaeology students with opportunities to practice public engagement. The "Dig the Past" project incorporated the additional objective, unique to its role within a university-based archaeological research program, of communicating archaeology's contribution to understanding the history of Michigan State University and East Lansing, and the cultural heritage of an academic community. This paper discusses the original objectives of the program, the workshops' perceived effectiveness in meeting these objectives from both a facilitator standpoint and a visitor standpoint, and raises a few insights gained from the experience for the sustainability of future iterations of such a project and for public archaeology as a whole.

[177] *Chair*

Dal Bo, Ernesto [247] see Schoenholzer, David

DAlpoim Guedes, Jade (Washington State University)

[106] *5500 Years of Changing Crop Niches on the Tibetan Plateau*

The timing and mechanics of the spread of agriculture to the Tibetan Plateau—one of the most challenging environmental contexts on Earth—is a focus of recent work and debate. In research on the spread of agriculture, researchers have sought evidence for the earliest, furthest, or highest occurrences of diagnostic elements. However, the case of the Tibetan Plateau illustrates a key flaw in current work: archaeologists have often uncritically interpreted the presence of plant domesticates at archaeological sites as being indicative of local agricultural practice. This assumption neglects the long history of food exchange on the Plateau—as elsewhere in the world even beyond the then limits of agriculture. The cause is a fundamental lack of understanding of where crops could be grown in prehistory. Using a formal model of the agricultural thermal niche between the 5500 cal. B.P. and the present, we argue that agricultural niches on the Tibetan Plateau were tightly constrained to lower elevation river valleys throughout time. This pattern is confirmed by analysis of the extent of modern crop production on the Plateau. The challenges deriving from these altitudinal constraints placed on early Tibetans largely explain how and why the Tibetan economy developed the way it did.

[19] *Discussant*

D'Alpoim Guedes, Jade [19] see Zimmermann, Mario

Dalpra, Cody, Brian Harmon (University of Arizona and National Parks Service) and Reuven Sinensky (University of California Los Angeles and National)

[268] *Clarifying Late Archaic, Basketmaker, and Pueblo I Project Point Types at Petrified Forest National Park, Arizona*

Late Archaic, Basketmaker, and Pueblo I time period projectile point types are problematic in the greater southwest because many exhibit considerable morphological overlap. The sizable collections from Petrified Forest National Park represent an excellent test case where all of these time periods are well represented. To characterize their considerable morphological range, we analyze over 80 projectile points from cross dated surface finds and the excavated sites of the Basketmaker-era Flattop site (AZ Q:1:2) and the Twin Buttes Pueblo I site (AZ Q:1:3). Utilizing both qualitative and quantitative techniques we develop a local typology that will be useful to archaeologists studying technological transitions between ca. 2000 B.C. and A.D. 900. Our results offer an additional chronological diagnostic tool for archaeologists in PEFO and surrounding areas, which can be cross-referenced against ceramic types and used to better date sites lacking ceramics.

Dalton, Jordan

[196] *Chincha Farmers: Understanding Inca Expansion, Strategies, and Motivations at Las Huacas, Chincha Valley*

The Inca Empire was the largest empire in the New World and its ability to expand relied upon the flexibility and diversity of its methods. In some regions, the Inca used force and installed their own loyal members imposing a direct rule; in other regions, local administrative structure and elite groups were kept largely intact. The Chincha Kingdom has often been cited as a prime example of Inca diplomacy and peaceful incorporation, whereby the Inca gained access to the Chincha Kingdom's mercantile trade routes and its connections to the pilgrimage site of Pachacamac. New evidence from the important agricultural center of Las Huacas is adding information on the role of farmers in this interaction. The 2015 survey has exposed evidence of strong Inca influence on Las Huacas' architecture. This presentation will look at Las Huacas in our efforts to understand Inca expansion into the Chincha Valley and Inca expansion in general. Las Huacas will be compared to other Inca sites on the coast and in the highlands, emphasizing architecture, building techniques, and urban planning.

Dalton, Sara

[294] *Excavation and Analysis of a Preclassic Chultun*

During the 2014 and 2015 field season excavations were carried out on a chultun at the ancient Maya site of El Mirador, Petén, Guatemala. This chultun

was situated near the Grán Acrópolis, with a 10-meter pyramid located directly to the north and a large L-shaped structure directly to the east, in an elite district. Over the course of excavations, the site was found to contain both Middle and Late Preclassic ceramics, including fragments of an elaborate incensario in the shape of an anthropomorphic mask. The chultun, which consists of two chambers, one of which has collapsed, and the other measuring 6.5 meters in diameter also contained a number of large stucco fragments, many of which bore the remnants of red, yellow, or black paint. Additionally, shaped stucco fragments suggestive of a wall mask were recovered from most units within the chultun. The size, location, and evidence of wall decoration point toward elite ritual usage, with further excavation of the collapsed portion planned in order to determine the full extent of the second chamber and establish a timeframe for the roof collapse.

Daltroy, Terence (Columbia University) and Veronica Williams (CONICET, Universidad de Buenos Aires)

[57] *Provisioning Inka Rule in NW Argentina*

For all its standardization, Inka rule regularly accommodated regional circumstances. This paper uses NAA of 316 sherds to examine how activities carried out under state auspices were provisioned in NW Argentina, and how local societies took advantage of the Inka presence for their own interests. We address how well the organization of administrative and economic spaces coincided, and what role the region's subject peoples played in determining the character of material assemblages used at state facilities. The principal conclusions are that multiple circuits of production and distribution existed in the imperial infrastructure and that both imperial and subject agents used the network for their own purposes.

[259] *Discussant*

Daly, Niamh (University College Cork), Elise Alonzi (Arizona State University) and Saskia Ryan (Trinity College Dublin, Ireland)

[147] *Connecting the Baseline: Applying Radiogenic Strontium ($^{87}\text{Sr}/^{86}\text{Sr}$) Isotopes to Irish Archaeological Research*

In Ireland, in the last decade we have seen a proliferation of isotopic studies in Irish bioarchaeology addressing questions such as paleodiet and paleomobility patterns spanning from the Neolithic to Post-Medieval periods. The Irish Isotope Research Group (IIRG), an innovative multidisciplinary group, was set up to tackle some of the limitations in this field of research in Ireland. A comprehensive strontium isotopic baseline has been established in order to better understand the processes affecting strontium isotope variation in the natural environment, for use in the interpretation of (1) environmental biosphere data and (2) biogeochemical data derived from archaeological material.

This poster provides an overview of the pioneering current research being undertaken by members of this group. Comparisons within the United Kingdom and continental Europe will be illustrated to show how Irish baseline data can be applied to related studies in different environments. Ongoing baseline research will be categorized by region, and key areas of interest in Ireland are highlighted. These data will make an original contribution to both Irish geological and archaeological research.

Damour, Melanie [39] see Warren, Daniel

Damour, Melanie (Bureau of Ocean Energy Management), Leila Hamdan (George Mason University), Jennifer Salerno (George Mason University), Robert Church (C&C Technologies, Inc.) and Daniel Warren (C&C Technologies, Inc.)

[83] *Gulf of Mexico Shipwreck Corrosion, Hydrocarbon Exposure, Microbiology, and Archaeology (GOM-SCHEMA) Project: Did the 2010 Deepwater Horizon Oil Spill Impact Historic Shipwrecks?*

After the 2010 Deepwater Horizon oil spill in the Gulf of Mexico, a rapid influx of research and damage assessment funds dedicated to studying the spill's impacts poured into the region; however, only one study is examining the spill's impacts on historic shipwrecks. The U.S. Bureau of Ocean Energy Management and study partners implemented a multidisciplinary approach to examine microbial community biodiversity on deepwater shipwrecks, their role in shipwreck preservation, their response to the oil spill, and how that response ultimately affects these submerged archaeological sites. The diversity of resident micro- and macro-infauna and their sensitivity to environmental change demonstrates the suitability of shipwrecks as ecosystem monitoring platforms. To assess micro- to macro-scale impacts, the study collected microbiological, geochemical, and archaeological data at wooden- and metal-hulled shipwrecks within and outside of the spill-impacted area for a comparative analysis. Results of the study have identified multiple lines of evidence that sites were impacted by exposure to spill-related contaminants. In addition, laboratory experiments simulating spill exposure to metal hull materials have yielded results that have implications for long-term monitoring efforts, submerged cultural resource management, and spill mitigation approaches.

[83] *Chair*

Daneels, Annick (IIA-UNAM Mexico)

[264] *Architecture and Human Sacrifice: Political and Ideological Significance of the Ritual Deposits in Monumental Earthen Architecture in South-Central Veracruz*

Investigations at several of the thousands of precolumbian mounded sites along the southern Gulf coast of Mexico revealed the existence of monumental earthen architecture. These supposedly "simple mounds" resulted to be sunken plazas, pyramids, palaces, ball-courts, tombs, and altars that were part of an urban layout. In high-ranking sites, buildings are recurrently associated with deposits reflecting several distinct rituals involving human sacrifice. Such findings bring added evidence for the extreme complexity of these societies' sociopolitical organization, and seem to contrast with the evidence available for both north-central and southern Veracruz in the Classic Period.

Daniel, Chloe (University of Iowa), Shelby Putt (University of Iowa) and Robert Franciscus (University of Iowa)

[181] *Investigating Other Causes for Stone Flake Features Attributed to Handedness*

Homo sapiens is the only primate species that currently displays a population level preference for right hand dominance. Previous studies have attempted to establish methodologies to determine handedness from stone tool debris because of the link between handedness and brain lateralization of the classic language centers, and its implications for the evolution of language. However, these experimental studies have produced varied results, and it is questionable whether handedness can be accurately determined from flake features. We conducted an experiment in which 9 left-handed and 9 right-handed novice flintknappers were video recorded as they made simple stone tools similar to the Oldowan industry. We used this footage to code their flintknapping gestures, such as the angle of percussion and positioning of the core on the support, in order to test whether left- and right-handers differ in the flintknapping gestures they use to produce flakes. A Chi-Square test revealed that right-handed individuals are more likely to utilize a horizontal position of the core than left-handed individuals ($p < 0.001$). We explore the possibility that these flintknapping gestures, rather than the dominant, percussing hand, are responsible for the flake features that previous studies have attributed to handedness.

Daniel Jr., I. Randolph [218] see Moore, Christopher

Daniel, Jr., I. Randolph [159] see Goodyear, Albert

Daniels, Brian (University of Pennsylvania)

[54] *Protecting Cultural Heritage by Promoting Community Welfare in the Syrian Conflict*

The recent conflict in Syria and Iraq has upended all aspects of daily life. There are now over 250,000 dead, and millions have been displaced. Famous heritage sites embedded within the region's cultural landscape have been damaged or destroyed. In the face of such human tragedy, what can archaeologists do? This paper discusses the efforts of the Safeguarding the Heritage of Syria and Iraq (SHOSI) Project, which are aimed at both alleviating human suffering and protecting heritage sites. Here, I focus on the SHOSI Project's recent humanitarian outreach at the archaeological parks composing the Ancient Cities of Northern Syria, a UNESCO World Heritage Site. Internally-displaced Syrians have taken refuge among the surviving architectural remains of these parks but often lack basic provisions. There is a sense among these refugees that the archaeological parks have offered real protection; they therefore express an obligation to protect the monuments for the future. By coordinating with other humanitarian NGOs, the SHOSI Project has sought to assist these refugees while enlisting them in emergency conservation actions. I suggest that this is one case study in which the attention of the international archaeological community has contributed to the social welfare of Syrians directly.

Danti, Michael [12] see Cuneo, Allison

Danti, Michael (ASOR Cultural Heritage Initiative) and Allison Cuneo (Boston University)

[254] *The ASOR Cultural Heritage Initiative: Planning for Safeguarding Heritage Sites in Syria and Northern Iraq*

Cultural Heritage Initiative—Planning for Safeguarding Heritage Sites in Syria and Iraq (CHI) is headed by The American Schools of Oriental Research (ASOR) and is funded by a cooperative agreement from the U.S. Department of State, Bureau of Near Eastern Affairs. Active conflict in Syria and northern Iraq is contributing to the damage and destruction of cultural heritage. This research project aims to: 1) raise awareness in Syria and Iraq and among the international community about current threats to the heritage of this region through ongoing monitoring and evaluation; 2) assist in mitigating adverse impacts; and 3) identify and plan heritage preservation projects and assistance that can be carried out in Iraq or Syria now and post-conflict. The project developed comprehensive documentation for the current condition and future preservation needs of cultural heritage in these two areas and will generate practices that are relevant for conflict zones in neighboring regions. This paper will present the goals and accomplishments of the project, including assessing the impact of the conflict on cultural heritage, working with local stakeholder to monitor and mitigate threats to sites, creating a digital map and inventory of heritage resources, and developing proposals for future preservation projects.

Darling, J Andrew (Southwest Heritage Research, LLC), B. Sunday Eiselt (Southern Methodist University), Rachel Popelka-Filcoff (Flinders University) and John Dudgeon (Idaho State University)

[13] *Hed̥t*

Iron oxides and other associated minerals ("ochre") are among the most common pigments used by prehistoric North American populations, particularly in the Hohokam region of central Arizona where they were employed in mortuary rituals, as body paint, and to decorate pottery, basketry, arrows, and pictographs. This paper identifies the wide variety of iron-oxides making up Hohokam, O'odham, and Pee Posh red paint (in O'odham, hed̥t) and it considers how prehistoric artisans manipulated earthy, rocky, and specular hematite for ritual purposes and craft production. Archaeological and ethnographic specimens are matched to raw material sources using LA ICP-MS and NAA. However, in our attempt to reconstruct the landscapes and practices of iron-oxide utilization, it comes as no surprise that geochemical definitions address only one dimension of a complex field of significance related to the prehistoric and ethnographic utilization of iron oxide. Other cultural aspects are considered in this exploration of O'odham hed̥t.

Darvill, Timothy (Bournemouth University, UK)

[34] *Beyond Hopewell: Ceremonial Centers and Their Cosmologies*

In many parts of the world, massive ceremonial centers appear at key stages in societal development, especially with the emergence of stable agricultural communities and the appearance of hierarchical or chiefdom societies. All differ in their detail, but they also share many characteristics. These include fixing key astronomical events in the structure of the monuments (solar and/or lunar); seasonal gatherings; associations with water; representations of ancestors or ancestral deities; burials; links to well-being and fecundity; and the use of a circle enclosing a square as a fundamental symbolic scheme. Drawing on examples in Britain, central Europe, and China, comparisons and contrasts will be made with the Hopewell sites in Ohio, and the overarching cosmologies and belief systems examined.

Das, Oindrila [132] see Lulewicz, Isabelle

Dávalos Navarro, Dolores

[64] *Architecture of the Late Pueblo in Southern Southwest and Northwest Mexico*

The pueblo tradition, located in the American southwest and Mexican northwest, has received greater attention in the United States than in Mexico until recently. The present research evaluates how the Mexican northwest differs from the southern portion of the American southwest using architectural characteristics.

The use of consecutive rooms at ground level characterizes the architecture of the puebloan communities in the study area. These room-blocks had different construction techniques and some of them were multi-story structures. The data collected for this poster comes from 13 different sites in an effort to trace community activities from patterns identified in architectural spaces that characterized the two sub-regions.

The differences in architectural elements revealed diverse dynamics between the two sub-regions as expressed in similar economies, organizations, and activities that took place in different spaces and in different proportions.

Davenport, James [57] see Makowski, Krzysztof

Davenport, James (University of New Mexico)

[91] *Inka Craft and Ritual Production: Compositional Analysis of Ceramic Pastes and Pigments from the Temple of the Sun, Pachacamac*

In Andean South America during the Late Horizon (A.D. 1400–1532), rituals and ceremonies, both inclusive and exclusive, were a major part of the Inka Empire's strategy for control of its subjects. These ceremonies involved the use of distinct Inka-style material culture, which has its origins in Cuzco but spread throughout the Andes with the expansion of territory of the empire Tawantinsuyu. The Inka required local craft producers to replicate these imperial styles as a part of their mit'a labor obligation to the state, though occasionally these styles were sometimes imported to provincial locations from the capital or other Inka centers. Pachacamac, on the central coast of Peru, was a major ritual and pilgrimage center before and during Inka control. This poster examines the chemical composition of pastes and pigments of ceramics found at the Temple of the Sun, the principal Inka structure at Pachacamac, using Neutron Activation Analysis (NAA) and Laser Ablation-Inductively Coupled Plasma-Mass Spectrometry (LA-ICP-MS). This analysis is used in an attempt to understand the level of control and influence the Inka exerted over local craft producers, as well as the role that these ceramics played in the production of state-sponsored rituals and ceremonies.

Davenport, Christian

[246] *Belle Glade Monumental Construction Examined*

Some of the densest concentrations of prehistoric monumental construction in Florida are located within the Kissimmee River Valley/Lake Okeechobee Basin areas. Based on 1930s–1940s aerial images and limited field investigations archaeologists have created typologies for the various circle ditch and linear earthworks. However, these studies did not examine the intra-relationships of the subcomponents that comprise the individual mound complexes, nor the intersite relationships to the physical landscape. Since many of these sites were destroyed before they could be professionally investigated, remote sensing has proven to be useful for exploring their extent. This presentation will examine these points through various remote sensing techniques and firsthand field observations illustrating the geometric complexity that went into constructing these sites and potential cultural implications.

[246] *Chair*

Davies, Gavin (University of Kentucky) and Maria de los Angeles Corado (Universidad del Valle de Guatemala)

[46] *Traditions and Transformations in the Southwestern Maya Highlands: Ceramic and Settlement Evidence from the Southwest Lake Atitlan Basin, Solola, Guatemala*

Following an intensive socialization campaign, the Lake Atitlan Archaeological Project (PALA) conducted systematic surface collections for over 50 properties within the municipios of San Pedro and San Juan La Laguna in the southwestern Lake Atitlan Basin. These investigations identified more than 30 archaeological sites including three large population centers with monumental architecture, a large number of smaller ritual and domestic sites, and several individual rock art locations. Test excavations were subsequently conducted at four sites with the primary goal of defining the ceramic sequence for the Classic to Postclassic transition. The initial results, presented here, indicate that the southwest Lake Atitlan Basin supported sizeable populations during the Late Preclassic, Early Classic, and Postclassic periods. Late Classic and Early Postclassic occupations are, however, continuing to prove elusive, suggesting a period of conservative development, population decline, or abandonment. The rich and diverse ceramic collection generated by the PALA project covering the Middle Preclassic through to the Spanish Conquest has the potential to shed considerable light on regional ceramic developments and to illuminate the origins and organization of the Tzutujil/Tziquinahay confederation that dominated the area during the Postclassic.

Davies, Gareth [222] see Laffoon, Jason

Davis, Kaitlyn (University of Colorado, Boulder), Steven Copeland (Crow Canyon Archaeological Center) and Grant Coffey (Crow Canyon Archaeological Center)

[66] *Inter-Site Visibility in the Mesa Verde Area through Time*

Numerous studies have pointed to a pattern of inter-site visibility in Chaco-era sites, both within Chaco Canyon itself and in other parts of the regional system. These studies suggest inter-site visibility is one line of evidence that supports the development and operation of the regional system in much of the American southwest during the Pueblo II Period (A.D. 900 to 1150). In the Mesa Verde region, community centers were present before the Pueblo II period as evidenced by larger sites, some of which display public architecture. The objective of this study is to utilize site location and temporal data provided by the Village Ecodynamics Project to assess if inter-site visibility was an important consideration in the placement of community centers prior to the Pueblo II florescence of the Chaco regional system.

Davis, John and Steven Hackenberger (Central Washington University)

[113] *Assessing Testing Programs and Strategies for Section 106 Determinations of Eligibility: U.S. Army Yakima Training Center, WA*

The U.S. Army Yakima Training Center (YTC) contains over 1,300 archaeological sites. Thirty years of inventory and archaeological testing have produced a significant body of archaeological reports and databases. Two university programs, several CRM firms, and now the Wanapum Band and Yakama Nation are working with the U.S. Army, studying and protecting the unique natural and cultural landscapes of the Yakima Uplands within the YTC. Synthesis of this work for the purpose of archaeological science, tribal consultation, and proactive management is ongoing. Changing management strategies and funding limitations necessitate a review of archaeological testing and NHPA Section 106 evaluation. Three areas of collaboration are needed: (1) analyze sample representativeness for lithic and faunal assemblages, (2) assess cost effective testing programs, and (3) develop landscape management recommendations. Sample sizes and artifact diversity are compared for surface and subsurface assemblages. Cost and benefits are measured for shovel probing, test pits, and block excavations. Landscape maps show complexes of sites and assemblages that require proactive management.

Davis, Loren (Oregon State University), Alex Nyers (Oregon State University) and Daniel Bean (Oregon State University)

[113] *3D Geometric Morphometry of Western Stemmed Projectile Points from the Columbia River Plateau*

We describe a digital 3D geometric morphometry approach that employs GIS-based routines to extract information about the form of Western Stemmed Tradition projectile points from sites located in the Columbia River Plateau of the Pacific northwest. These data are used to describe a number of novel morphometric measures and to compare the design characteristics of regional early stemmed projectile points. We explore issues of artifact use, rejuvenation and repair, and how these aspects can be quantified in digital 3D models of projectile points. Topics of data archiving, access to 3D models,

and physical replication are also addressed.

Davis, John [120] see Chenvert, ErinMarie

Davis, Christopher

[167] *Potential Paleoindian Quarry Site in Brazil's Lower Amazon*

A prehistoric Amazonian site near the town of Monte Alegre in the state of Pará, Brazil, shows evidence for potential use as a sandstone quarry by paleoindians. The rock art site at Paineiro do Pilão has a wall that appears to have been reduced to a flat surface through repeated micro flaking, forming part of a semi subterranean shelter. The flattened wall comprises a platform from which ancient artists painted mostly sky-themed paintings on the open-air stage above. The shelter itself had subsequently accumulated sediment over the course of 13,000 or more years, interring part of the wall and some of its more prominent "quarry" features. Excavation of the shelter floor unearthed large boulders in the lowest levels, and micro flakes in most layers. Crude sandstone lithics and red and yellow ochre-stained stone were also disproportionately recovered from the lowest excavation levels. Evidence for quarrying is implied by the presence of unfinished lithics and also the relative lack of medium-sized nodules. Accelerated mass spectrometry radiocarbon dating from sediment levels covering the lowest quarry marks indicate an age of $11,212 \pm 69$ to $10,993 \pm 62$ uncalibrated years B.P. (13,286–12,685 calibrated [Oxcal v4.2.3]).

Dawe, Bob [21] see Kornfeld, Marcel

Dawson, Tom

[210] *Scotland's Coastal Heritage at Risk: Prioritizing Action and Connecting Research and Citizen Science at Sites Threatened by the Sea*

In Scotland, there is a long tradition of archaeologists working at sites threatened by coastal erosion. Government Agency, Historic Scotland, has sponsored a series of coastal surveys in order to locate sites; and the SCAPE Trust has worked with national and local heritage bodies to prioritize action and produce an interactive 'Sites at Risk' map from the data. The map includes sites of all periods and site types, many of which contain a wealth of palaeoenvironmental data.

The coast is a highly dynamic zone, and once a site is recorded, its condition can rapidly change. In Britain, heritage data is publically accessible, and SCAPE is employing a citizen-science approach to gathering data. Using apps and the internet, the public are undertaking recording projects to update records and report new discoveries.

Academic research priorities from the Scottish Archaeological Research Framework are being linked to the updated 'Sites at Risk' data, and the aim is to encourage the research community to investigate some of the most threatened sites. Undertaking practical action at vulnerable sites is helping to turn a challenge into an opportunity, and a new understanding of the past is being presented by sites threatened by natural processes.

[1] *Discussant*

Dawson, Emily (University of Notre Dame) and Mark Schurr (University of Notre Dame)

[111] *Multi-Element Characterization of Early Nineteenth Century Edged Pearlware from Native American and Euro-American Sites*

Edged Pearlware, a type of refined earthenware imported from England, is found at many early nineteenth century Native American and Euro-American sites in North America. Due to the small size of sherds and the lack of sherds with maker's marks, it is currently difficult to identify the date, location, and manufacturing process for Edged Pearlware. This poster compares sherds from three sites occupied during the first half of the nineteenth century: Pokagon Village, a Native American site; Collier Lodge, a Euro-American site; and McCartney's Cabin, a Euro-American/Metis site. Utilizing micro X-ray fluorescence (μ -XRF) to determine composition both of whole sherds and of particular pigments allows us to compare the chemical composition of various sherds and their pigments and thus to classify the changes in the manufacturing process over time. Our results indicate differences in chemical composition for sherds of the same pattern, suggesting the possibility of dating sherds based on chemical composition, as well as difference in pigment composition, suggesting that the sherds differ in their manufacturers. Our project indicates that micro-element characterization has the potential to improve information about dating and manufacturing processes not only for edged pearlware, but for other nineteenth-century earthenwares, as well.

Day, Zachary (University of Nebraska-Lincoln) and Heather Richards-Rissetto (University of Nebraska-Lincoln)

[121] *Creating Interactive Landscapes with Multi-Method Modeling*

Digital reconstructions and 3D modeling have become an increasingly frequent application in archaeology for the purposes of preservation and visualization. As part of the MayaCityBuilder Project, we are developing an immersive 3D environment of late eighth-century Copan, Honduras, that incorporates high-resolution base models and hypothetical reconstructions into an open-world environment. Our goal is to offer users opportunities to freely explore the models in context to their surroundings and provide linked archaeological information in the form of text, images, and maps. Using GIS and procedural modeling software (ArcMap, CityEngine) and 3D modeling programs (SketchUp, Blender), we integrate georeference 3D models of still-standing architecture with reconstructions of structures that no longer exist but have associated archaeological evidence. These 3D models are inputted into the Unity gaming engine to create an immersive environment embedded in lidar-generated terrain. Detailed documentation of the workflow and the use of procedural modeling allow the virtual reality environment to be updated with newly-acquired base models and test alternative reconstructions. As part of this process, we seek to develop a system that enables public participation in the form of annotation, photos, and other digital media.

Day, Peter (University of Sheffield)

[140] *The Longevity of Ceramic Production Centres: Historical Contingency in the Analysis Of Pottery*

Recent analytical programmes on pottery of the Aegean Bronze Age have identified compositional patterns that not only link the early third millennium to the late second millennium B.C., but also clearly lay the foundations for production through to Roman times. Continuity in ceramic craft practice can be understood in terms of specific choices made in raw material selection and manipulation, but also at times through the recurrence of characteristic methods of vessel forming and even the nature, quality, and aesthetics of surface finishes.

While many chemical and petrographic studies of ceramics interpret technological reconstructions and the distribution of pottery products in terms of the link between production organisation and political structure, such continuities call into question such simple correlations. Using a number of different,

detailed case studies which emphasise the history of practice in specific production centres, this paper questions what we are to understand by continuity in pottery manufacture and the degree to which such practices may even mask variation in craft organisation and perceived productive complexity.

The implications of these emerging patterns for our understanding of both Old and New World ceramic production are considered.

Day, Peter [257] see Gilstrap, William

De Anda, Guillermo [46] see Garcia, Dante

De Anda Alaniz, Guillermo (Universidad Nacional Autonoma De Mexico)

[294] *Saving Our Past with Technology of the Future*

The Yucatan Peninsula has become one of the most important areas of the world for underwater archaeology research. New discoveries go from extinct mega fauna and ancient human remains from the ice age, to bones of the ancient Maya and artifacts, all in a great state of preservation. Our team has developed a new non-intrusive survey methodology, which uses photography to document artifacts and bones. Photographs are then processed by custom made software, which allow us to create 3D models with amazing hyper realistic results. We use these models to create a database that can preserve the artifacts through photography and even produce exact replicas of every single materials registered. We believe that this technique might set a new way to survey caves and cenotes with relatively low cost and amazing results.

De Carteret, Alyce (Brown University)

[27] *There's No Place Like Otot: The Domestic Architecture of the Maya in Their Own Words*

The construction of the home ('otot' in the language of the Classic Maya inscriptions) is one of the most important and meaning-laden events in Maya communities, modern and ancient alike. In the Maya world, culturally-contingent notions of propriety, order, and moral rectitude guide each stage of housebuilding, including the procurement of materials, the organization of labor, and the actual act of construction itself. Additionally, houses must be properly consecrated before they can be inhabited. In this process, entire communities unite to collaborate in what is seen as an act of world-making in which the universe is built anew with the house as its epicenter. This paper will examine housebuilding and the stages, materials, and people involved therein from a linguistic perspective that situates archaeological and ethnographic data within the language the Maya themselves use to describe the process. With the ultimate aim of providing cultural context for archaeological remains, the paper will present the results from a thorough review of Mayan language dictionaries and other colonial documents located in the holdings of the John Carter Brown Library in Providence, Rhode Island, as well as textual references to architecture in the ancient inscriptions.

de Carteret, Alyce [179] see Kwoka, Joshua

De Figueiredo, Marcio

[196] *Symbolic Patterns of Northern Peruvian Coast Pottery in Inca Times*

The present study proposes a comparative analysis of the iconography and morphology of ritual pottery produced in the northern Peruvian Coast during the Late Intermediate Period and Late Horizon. Ceramics produced in that region during the fifteenth century presents several changes in the attributes of anthropomorphic and zoomorphic protagonists (here addressed as "figures of power") when compared to those of prior periods. Such modifications in the symbolic patterns suggests aspects of ancestry, ritual practices, and imagery promoted by Chimú and Inca elites, on their respective ruling contexts in the Central Andes. Under the aegis of Inca rule, ritual pottery produced in the region presents a clear reduction on the representation of ancient local figures of power. In this sense, seems that archaeological data match colonial manuscripts information on the Inca need to legitimize their "foreign" power in such an extended territory. However, the permanence of local attributes in the representation of religious/political protagonists leaves us with some puzzling questions about control of ceramic production and political-religious negotiation.

This communication seeks to present the results of our research and the advances proposed in our Ph.D., aiming to comprehend the context of Inca interaction with local elites of the northern Peruvian Coast.

De La Fuente, Guillermo (Dr.), Jeffrey Ferguson (Archaeometry Laboratory, Research Reactor Centre) and Michael Glascock (Archaeometry Laboratory, Research Reactor Centre)

[91] *Pottery Compositional Studies Through NAA and Petrography from Northwestern Argentina: A Case Study from Southern Sector of Abaucán Valley (Catamarca)*

Pottery production during the Late Period (c. A.D. 900–1450) in northwestern Argentina has been characterized as primarily a household industry, becoming increasingly intensified and concentrated following the appearance of the Inkas in the region. Most pottery production in these chiefdom sociopolitical contexts was for local consumption and distribution following different technological organization schemes expressing several degrees of standardization, specialization, firing technology, and use of ceramic raw materials along the region. Results from the NAA and petrographic analyses provide new data concerning local versus non-local pottery production and vessel exchange for these two prehispanic cultural periods. Chemical data demonstrate the use of different clay sources through time until the Inka appearance in the region, when a more structured and controlled production is observed. Petrographic analyses show a similar change in the ceramic pastes recipes used by ancient potters.

De La Rosa, Anthony [64] see Payne, Jennifer

De Leon, Jason [128] see Stewart, Haeden

De León, Jason [234] see Delgado, Andrea

De Lucia, Kristin (Weber State University)**[128]** *Introduction: Why Social Archaeology Matters*

Almost 25 years ago, Elizabeth Brumfiel (1992) argued that ecosystems approaches to archaeology hampered our understanding of social change by neglecting the internal dynamics, conflicts, and negotiations that arise from gender, class, and factional affiliations. Rather than adaptive systems, Brumfiel (1992:559) argued that "cultural systems are contingent and negotiated, the composite outcome of strategy, counterstrategy, and the unforeseen consequences of human action." Human agency is now widely regarded as an important generative force of cultural change and archaeological research on gender, households, class, and ethnicity has exploded in the past two decades. At the same time, social research is either underutilized or ignored in the broader debate on the importance of archaeology in the modern world. In the past year, we have seen worldwide religious violence, increasing violence against women, massive migrations, and nationwide protests erupting over racial inequality. Archaeologists are doing important work on these topics that inform our understanding of the present, but are we, as a field, doing a good enough job emphasizing the relevance of this work to modern social concerns? Is social archaeology adequately represented across the field and through funding sources? What challenges do we face and what barriers remain?

[128] *Chair*

De Lucia, Kristin [128] see Juarez, Santiago

De Maeyer, Philippe [212] see Lonneville, Britt

De Maret, Pierre and Serge Bahuchet (Muséum national d'Histoire naturelle, FRANCE)**[295]** *Variety of Rain Forest Subsistence Strategies. A Comparative Overview*

A large scale comparative research project on the state of the peoples living in the rain forests of central Africa, the Guyana's in South America and in Melanesia, has highlighted the anthropic character of tropical rain forests. It has particularly underlined the strong correlation between biodiversity and cultural diversity and how domesticated and wild resources interact in the various subsistence systems. Activities associated with shifting cultivation contribute to man-made biodiversity in significant ways. Agrobiodiversity, as well as the use of space and the extent to which tropical forest people have varied in their mobility, all deserve more attention by archeologists. Territoriality is determined by resource distribution as much as by social organization. The different kinds of local knowledge and practice are always embedded in a cultural context and are socially distributed. The extent of the knowledge of the various timber and non-timber forest products and their possible use is telling. All of the above represents the challenge that we must face in attempting to reconstruct the past of those populations.

De Marigny, Elizabeth (Department of Anthropology, The University of Texas at Austin)**[130]** *Romanizing Production: A study of Castro Ceramics before and after Roman Imperial Expansion in Northwestern Portugal*

The Civitatis of Bagunte is a fortified hilltop settlement inhabited by the Castro Culture people from the Late Bronze Age to the Roman Period. Ceramic artifacts from the Iron Age and Roman periods have dominated the assemblages found at Bagunte over the last five excavation seasons. My graduate research focuses on a question of broad implications for economic anthropology and social archaeology: How does colonization affect patterns of indigenous production before and after imperial expansion, through the actions and agency of both local producers and colonizers? More specifically, addressing this question will ask how the Roman Empire promoted or hindered local production of ceramics in northwestern Portugal after Roman expansion into Iberia. Utilizing ceramics found in pre-colonized contexts and comparing them to those found in later, post-colonized contexts will identify how Roman expansion affected ceramic production at Castro sites. Specifically, I will focus on comparing indigenous pottery and Roman pottery found at sites throughout northwestern Portugal, most importantly from the Castro Culture site of Bagunte. In doing so, I will utilize macroscopic and microscopic analyses that will answer pertinent questions concerning the economy and the role of ceramic production at the Bagunte site.

De Oliveira, Paulo [295] see Heckenberger, Michael

De Saint Pierre, Michelle (Facultad de Ciencias Sociales, Universidad de Chile)**[21]** *The Old Age of Mitochondrial Linage D1g from the Southern Cone of South America Supports the Early Entry of the First Migrants*

The southern cone of South America has been an important source of information regarding the early peopling of America. The discovery of Monte Verde archeological site meant a revolution, leading to the idea and eventual acceptance of the Coastal route, also named Pre-Clovis hypothesis. Notwithstanding the fact that many pre-Clovis sites has been discover throughout America and this hypothesis is already accepted, the debate of the real age of the first migration still continues. Probably because the absence of very early archeological sites in North America, the genetic evidence has become the principal support for the early ages of American settlement, however, not without controversy.

The mitochondrial subhaplogroup D1g described in 2012 and found in Amerindian populations of southern Chile and Argentina, represents today, as Monte Verde then, an interesting paradox that has not been discussed properly. The ages obtained for D1g, between 25,000 to 19,000 years B.P., are extremely old for a South American mitochondrial subhaplogroup. The phylogeny of D1g gives an old frame that does not fit into the ages for the rest of Amerindian mitochondrial haplogroups; and invite me to ask, is this lineage the evidence to finally support the old age of the pre-Clovis migration?

De Smedt, Philippe (Ghent University) and Marc Van Meirvenne (Ghent University)**[197]** *A New Prespective on Landscape Archaeology through Electromagnetic Induction Survey*

While electromagnetic induction (EM) instruments have been used for archaeological prospection since the 1960s, until recently their implementation remained rare. Only during the past decade, EM sensors, which allow capturing both magnetic and electrical properties of the subsurface, have become a more standard part of the archaeo-geophysical toolbox. Weighing heavily on applications in soil science, EM surveys are now proving their worth in discerning both human and natural variations. Through integrating archaeological and pedological information, EM prospection data provide a broad basis in understanding human-landscape interactions in different environments, from prehistory to modern times.

Here, we elaborate on how EM surveys can provide a robust foundation for studying past landscapes. Illustrated with studies from Late-Glacial palaeolandscapes mapping to researching medieval wetland areas, over recent high-resolution and square mile-prospection datasets from Stonehenge (UK), we discuss the potential and pitfalls of EM for landscape archaeology.

De Vore, Steven**[34]** *Magnetic Survey of the Mound City Group at Hopewell Culture National Historical Park in Ross County, Ohio*

Mound City Group is a Hopewell mound and enclosure site located in south-central Ohio. The site was originally mapped by Ephraim Squier and Edwin Davis in 1846. The prehistoric earthworks consisted of 24 mounds within a square embankment wall and surrounded by eight borrow pits above the right bank of the Scioto River. In 1917, the mound group was leveled by the U.S. Army during the construction of the World War I training camp of Camp Sherman, except for Mound 7. After Camp Sherman was razed in the 1920s, the Ohio Historical Society excavated the site and reconstructed the Hopewell earthworks and mounds. The National Park Service conducted additional archaeological investigations at the site from the 1960s to the present. Between 2010 and 2013, a magnetic survey of the entire site was conducted by the Midwest Archeological Center in order to obtain a baseline data set of buried archeological features at the site. A dual fluxgate gradiometer was used to conduct the magnetic investigations. The analysis of the resulting data revealed the presence of numerous features associated with the World War I training camp. Several magnetic features appear to be related to the Hopewell activities at the site.

De Wulf, Alain [121] see Verlee, Jotka

Deagan, Kathleen [28] see Scarry, C. Margaret

Dean, Carolyn**[99]** *Intersubjectivity in Inka Visual Culture*

The Inka of western South America, who reached the height of their power in the fifteenth and early sixteenth centuries, identified certain rocks as sharing many characteristics with human beings. Such rocks were sentient and some of them had the ability to speak and move. Some rocks were said to eat and drink the foods and liquids humans eat and drink, dress in human clothing, and speak Runasimi, the language spoken by the Inka. The Inka, in recognizing the sentience of certain rocks, practiced intersubjectivity. Their intersubjectivity, in turn, requires modern interpreters of Inka visual culture to re-think traditional art historical dichotomies such as subjects and objects.

Dean, Rebecca**[111]** *Community-based Research in the Archaeological Classroom*

This poster focuses on the pedagogical challenges and educational outcomes of including excavations at a nineteenth century cemetery in an Introduction to Archaeology class. The research project was initiated by a local family when their cemetery was destroyed for farmland. Community-based research is archaeology for, by, and of local communities, a collaboration between community members and researchers. The Anthropology program at the University of Minnesota Morris (UMM)—a small, public liberal arts college in the rural western prairie—incorporates extensive community-based research in our classrooms. As an American Indian serving institution, UMM has both the obligation to train Native students in the study of the past, and the opportunity to learn from their perspectives. Learning through action, and reflection through service, are key tenets of our educational approach. Student feedback and more objective measures of learning show that community-based research significantly improved educational outcomes.

Dean, S.D. [137] see Shreve, Nathan

DeAngelis, Joseph**[38]** *Large Bones, Small Bones, Big Bones, Little Bones: A Quantitative Analyses of Sampling Bias in the Early Paleoindian Zooarchaeological Record*

It has been suggested that the Early Paleoindian archaeofaunal record is biased against small mammals because larger mammals are easier to detect in the archaeological record. It has also been suggested that remains of small mammals would have been more abundant if careful excavation procedures would have been employed. For this poster, I present a quantitative analysis of the Early Paleoindian archaeofaunal record in the continental United States by testing the hypothesis that the zooarchaeological record is biased against small mammals. I do this by analyzing taxonomic and body size diversity of Early Paleoindian zooarchaeological assemblages based upon the year in which they were excavated. If the Early Paleoindian record is bias against smaller mammals, then it would be reasonable to suspect that sites excavated earliest would consist mainly of large bodied mammalian remains while more recent sites that may have been more carefully excavated would consist of numerous types of taxa of all body sizes. The results show that this is not the case with numerous different types of taxa of all body sizes present in some of the earlier excavated sites while sites with large and small mammalian remains have been consistently excavated throughout time.

DeAngelo, Rebekah (Yale Peabody Museum) and Robert Gal (National Park Service)**[217]** *An Inadvertent Endowment: Giddings' Contribution to Resource Preservation in Northwest Alaska*

James Louis Giddings was not only a pioneer in Arctic archaeology but he also contributed significantly to the protection of areas of archaeological importance, enabling the continued research of subsequent generations. I explore his direct and indirect roles in establishing federal protection for Alaskan archaeological sites and related lands during and after his life. His research and writings contributed to the establishment of four National Historic Landmarks (NHL), one National Monument, and a National Park that together protect over 3,700 square miles (2.4 million acres) of parklands in northwest Alaska. The sites of Ipiutak and Iyatayet both received NHL status in 1961, the first such designations in Alaska. His excavations on the beach ridges of Cape Krusenstern formed the scientific basis for its 1973 NHL designation and eventual recognition as a National Monument in 1978. His exploration of Onion Portage contributed to its 1978 NHL designation and helped establish the importance of the resources of Kobuk Valley National Park in 1980. Although it was not the focus of his field work, and much was accomplished by others, the protection of archaeological sites and related resources in northwest Alaska is an undeniable component of his legacy.

Deats, Jennifer (University of Colorado)**[115]** *Ceramic Analysis at Chief Looking's Village (32BL3) in Bismarck, ND*

Chief Looking's Village (32BL3), also known as Ward Earth Lodge Village, is located near downtown Bismarck, North Dakota. This site, occupied for a relatively short period in the mid-1500s, displays two distinctly different house types, one "local" and one "foreign" in design. Potential storage pits within two house outlines at Chief Looking's Village, identified through remote sensing, were excavated by the Paleo Cultural Research Group during the 2015 summer field season, and the artifacts analyzed throughout the school year. My thesis project centers on the ceramic artifacts of this site, analyzing construction and decoration of ceramic artifacts to identify the "local" vs. "foreign" distinctions as well as contrast the assemblages recovered within each distinctive house type.

DeBlasis, Paulo [167] see DeSouza, Jonas

Deckard, Nicholas [216] see Follensbee, Billie

Decker, Michael (University of South Florida)

[161] *Byzantine Archaeologies*

The past 20 years have witnessed important research in the core areas of Byzantium, especially in Asia Minor, as well as in territories governed by Constantinople prior to the Arab conquests of the seventh century. Byzantine archaeology has long remained conservative and often the preserve of those interested in art history or nationalist agendas. Nonetheless, many aspects of Byzantine archaeology remain unexplored or neglected, in part because of a lack of academic resources and especially because Byzantium does not lend itself readily to nationalist agendas of current nation states.

In this paper, I will examine recent developments in Byzantine archaeology and material culture, including current active areas of research, major problems that occupy Byzantine scholars, and the role of archaeology within several important debates within Byzantine studies. Among the topics which I will explore are the question of the decline of the classical city and its continued centrality within the discipline which has created an oversimplified concept of space and meaning within landscapes. Additionally, I will examine some of the current challenges to Byzantine archaeology and promising areas of new research.

Declet-Perez, Mariela (Centro de Estudios Avanzados de Puerto Rico y el Caribe)

[50] *Results of the Analysis of the Coral from Tibes Ceremonial Center, Puerto Rico*

This work presents and discusses the final results of an investigation focused in the strategies for the acquisition and transportation of coral by indigenous societies, analyzing the material obtained from the Tibes Ceremonial Center, Puerto Rico. This study was focused on the "chaîne opératoire," to demonstrate the utility of this type of material in archaeological studies in the Caribbean. With this approach, we were able to identify the collection areas and methods, the manufacture and use of the material, since these are fundamental in the "chaîne opératoire." This aspect of the study gives a more accurate view of the "coral element" and how this element was integrated in the activities of the indigenous societies.

Dedrick, Maia [26] see McAnany, Patricia

Deere, Bobi (University of Tulsa)

[98] *Following the Shell: Pxr Analysis on Engraved Busycon Whelk from Spiro and Cahokia*

Marine shell was ubiquitous in the Mississippian southeast. In an effort to shed light on where the shell originated, X-Ray Fluorescence analysis was done on a sample of Spiro engraved shell, and on Cahokian engraved shell. As a second line of questioning, results were separated by previously assigned styles, including Braden and Craig. At this point, sourcing with the Pxr only points to either the Gulf of Mexico or the Atlantic Coast. However, interesting questions have arisen in the data about trade routes and interaction among the prehistoric Mississippian people.

deFrance, Susan (University of Florida)

[28] *The Historical Zooarchaeology of New Orleans in Comparative Perspective*

The zooarchaeology of historical contexts in New Orleans has benefited significantly from analyses conducted by Dr. Elizabeth Reitz and her students and colleagues. Several of these analyses were conducted as part of cultural resource management projects that were primarily site specific. I present a comparative analysis of various zooarchaeological projects from New Orleans contexts to examine the contribution of Reitz and others to our understanding of past food practices, animal economics, and urban provisioning. In addition to placing the various projects in comparative perspective, I describe recent faunal research projects from French, Spanish, and hospitality contexts in the French Quarter that date to the eighteenth and nineteenth centuries. These contexts include the once public space of St. Anthony's Garden, the Ursuline Convent grounds, and the Rising Sun hotel. I also compare the zooarchaeology of New Orleans to that of other urban assemblages in the southeastern United States, particularly Charleston, South Carolina, and later assemblages from Saint Augustine, Florida. These intra-city and inter-city comparisons demonstrate how zooarchaeological analyses of topics beyond subsistence can be used to advance our knowledge of past behavior.

[219] *Discussant*

deFrance, Susan [222] see Kamenov, George

DeFrancq, Jelle [206] see Gerdau-Radonic, Karina

DeGiovine, Michael [155] see Knell, Edward

DeGraffenried, Jennifer [200] see Kaiser, Bruce

Degryse, Patrick [79] see Vandam, Ralf

Delaere, Christophe

[233] *Contribución al estudio de la ocupación Tiwanaku (A.D. 500-1050) e Inca (A.D. 1430-1530) en el lago Titicaca, Bolivia: aportación de la Arqueología Subacuática*

El lago Titicaca se encuentra en el corazón del paisaje cultural Tiwanaku. Las excavaciones subacuáticas realizadas en 2014 a lo largo del espacio litoral de la Isla del Sol (Puncu) sitúan al lago como nexo de comunicación y de intercambio de toda la cuenca lacustre. En el plano ritual, este mar interior formaba parte de la vida cotidiana y como tal ha jugado un papel preponderante en la relación que mantenía el hombre con el territorio en el que vivía; racionalizándolo para comprenderlo, elaborando objetos simbólicos para representarlo y creando ritos para mantener esa relación. Si bien la élite dirigente de Tiahuanaco desapareció en el siglo XI, el Titicaca fue colonizado desde el siglo XV por los Incas, quienes lo convirtieron en su lugar mitológico de origen como nuevo grupo étnico dominante. Sin embargo, el registro arqueológico y la distribución de las ofrendas subacuáticas, documentadas en 2013 (Khoá), indican que las ofrendas Tiwanaku e incas responden a mecanismos rituales diferentes. La percepción actual del espacio sagrado no es únicamente una herencia Inca, sino que la percepción de las geoestrategias de ocupación del territorio se encuentra actualmente truncado por las variaciones históricas del nivel de las aguas del lago.

DeLance, Lisa (University of California, Riverside) and Jaime Awe (Northern Arizona University)

[288] *Building a Typology: The Formative Period Figurine Assemblage from Cahal Pech, Cayo, Belize*

Nearly every excavation at the site of Cahal Pech has recovered ceramic figurines. The ubiquitous nature of these figurines in a multitude of stratigraphic levels illustrates the importance of a figurine industry during the Formative Period. A comparative analysis of figurine attributes in this collection, in addition to collections found at neighboring sites in the Belize River Valley, reveals a unique style of figurine representation not found in any other regional figurine style in Mesoamerica.

This paper discusses the unique attributes found on figurines from the Upper Belize River Valley and compares them to other, contemporary, figurine assemblages throughout Mesoamerica to illustrate the exclusivity of the attribute combinations found in this region. Taken together, the stylistic attributes associated with ceramic figurines such as eye style, mouth style, and ear spool demarcation form a unique typology of figurine representation that can be understood as diagnostic to the Upper Belize River Valley in general, and Cahal Pech in particular, during the Formative Period.

Delgado, Mercedes [57] see Makowski, Krzysztof

Delgado, Mercedes, Paula Olivera (Lab. de Fluorescencia de rayos X - Instituto Peru), Eduardo Montoya (Lab. de Fluorescencia de rayos X - Instituto Peru), Jorge Bravo (Laboratorio de Arqueometría - Universidad Nacional) and Miriam Mejía (Laboratorio de Arqueometría - Universidad Nacional)

[57] *Characterization of Ceramics of the Lima Culture – The Villa El Salvador Site*

Ceramic samples from the Villa El Salvador site (Early Intermediate Period, 100 B.C.–100 A.D.), located at the Central Coast of Peru, have been analyzed. The goal is the study of production techniques and interchange patterns. The techniques of neutron activation analysis, energy dispersive X-ray fluorescence (EDXRF), and Mössbauer spectroscopy were applied to characterize the ceramic samples. Multielemental composition techniques and multivariable analysis allow us the identification of group clusters. The application of the non-destructive technique of EDXRF to a group of whole vessels has allowed us to determine their multielemental composition; these results were compared with those obtained from the ceramic sherds. We present the results obtained at MURR Archaeometry Laboratory, which were compared with those obtained at the Peruvian Nuclear Energy Institute (IPEN) and at the San Marcos University Archaeometry Laboratory. The goal was to establish a collaborative program among these laboratories. The data obtained allow discussing about pottery production with provenance data involving local and non local production, and vessel exchange at a regional level.

Delgado, Andrea, Jason De León (University of Michigan), Cameron Gokee (Appalachian State University) and Haeden Stewart (University of Chicago)

[234] *En Las Vías: Suffering and Triage on the Central American Trail*

Undocumented Central Americans migrating to the United States must first cross the entire country of Mexico. In order to make this clandestine crossing, the majority of people ride on the tops of deadly freight trains and walk along train tracks that traverse hundreds of miles of remote Mexican wilderness. This perilous journey can last anywhere from weeks to several months. During this stage of migration, people suffer from a variety of injuries and ailments including (but not limited to) physical and sexual assault, exhaustion, dehydration, infections, lacerations, and broken bones. Drawing on archaeological and ethnographic data collected by the Undocumented Migration Project in Chiapas, Mexico, in the summer of 2015, we examine how Central American migrants deal with pain, injuries, and illness while en route through an analysis of pharmaceutical artifacts found along train tracks and at migrant camp sites. Comparing this suite of pharmaceuticals with those recovered from undocumented migrant camp sites along the Arizona-Mexico border, we posit that the archaeological record of these two stages of undocumented migration reflect unique environmental and social contexts, as well as distinct differences between the level and types of violence and suffering experienced by Central American and Mexican migrants.

Delgado Espinoza, Florencio

[97] *Crafting and Ordering the Sacred Space: Landscape, Religion and Political Organization of the Manteño Society of Coastal Ecuador*

Powerful chiefly elites seem to have been always concern with “crafting” themes of ideological order to convince followers of their divinity character and justify being at the top of social and political hierarchy. This concern in some instances has resulted in the “institutionalization of belief systems forged by these elites. In coastal Ecuador, prior to the Spanish conquest, the Manteño society developed a religion system that was based on the creation of a sacred landscape, around which they organized their settlements. Placing temples on elevations with clear view to the ocean, and configuring islands as pilgrimage places, are some of the main ways Manteños ordered the space. In this presentation, I will focus on discussing the development of the Manteño religion landscape.

Delgado Espinoza, Florencio [282] see López, Andrea

Delle, James

[126] *Plantation Life Beyond the Village: Examining Evidence for Residence in Provision Grounds*

The archaeology of the enslaved experience on Caribbean plantations has traditionally focused on life in the plantation village. These spaces, often crowded and providing little privacy, were but one place on the plantation landscape inhabited by enslaved workers. As has long been known, in the British West Indies under slavery, workers were required to grow their own food to supplement the mostly meager rations provided sporadically by plantation managers. The small farms tended by the laborers, known in the British West Indies as "provision grounds," were located in areas of estates thought to be of marginal use to the planters. Five seasons of archaeological investigations at Marshall's Pen, an early nineteenth-century coffee plantation in Jamaica, have resulted in the identification, excavation, and analysis of five house platforms associated with provision grounds outside of a village context, as well as five house platforms within a more traditional plantation village. This paper will use this archaeological data to reconsider the meaning of plantation space by considering the landscape of the estate from the perspectives of the enslaved people who lived both within and beyond the plantation village.

[126] *Discussant*

Delle, James [126] see Clay, Elizabeth

Delpuech, André

[141] *On the Trail of Calinago Ethnographic Objects from the Lesser Antilles in European Museums*

From the first contacts with the Amerindians, conquerors, voyagers, missionaries, and so on have brought back to Europe numerous attributes of the New World: natural curiosities as well as manufactured objects. Various historical sources attest to the presence in France of seventeenth and eighteenth century Amerindian objects from the Lesser Antilles in some cabinets of curiosities. Today, paradoxically, not a single object in contemporary collections is attributed to the Calinago or so called "Island Caribs" anymore. However, several French museums hold seventeenth and eighteenth, and even sixteenth, century collections of the American continent, some of which certainly contain pieces from the Caribbean region. The majority of these pieces is until now recorded as originating from the lowlands of South America. Nevertheless, these attributions are not based on any exact information; being poorly or not documented at all, the precise origins of these collections (clubs, basketry, feathered apparel, bows and arrows, etc.) remain to be determined. It is likely that some of these objects originate from the Lesser Antilles and are thus testimony to the material culture of the Amerindians who occupied the islands upon the arrival of the Europeans.

DeLuca, Anthony (University of Colorado Denver)

[27] *An Architectural Energetics Analysis of Ceremonial Architecture from the Shaft Tomb Culture of the Highland Lakes Region of Jalisco, Mexico*

During the Late Formative to Classic Period (300 B.C.–550 A.D.) in the highland lakes region of Jalisco, Mexico, a number of concentric circular ceremonial monuments known as guachimontones were built by the shaft tomb culture. The largest site in the region is Los Guachimontones near the town of Teuchitlan. The site is thought to have been governed by competing familial groups within a corporate framework rather than a single powerful ruler. The platforms that are a part of a guachimonton are thought to correspond to one, or possibly more, of the ruling competing groups based on previous analysis of recovered material culture from excavations. Whether or not competition was evident based on the structures themselves was unknown. This study performed an architectural energetics analysis of one of the monuments at Los Guachimontones to address this issue. Based on the analysis, questions on quality of construction between platforms, significant difference in sizes of platforms, and how labor was organized between these competing groups were addressed and whether these answers fit with existing models for the site.

Delvaux, Thomas [156] see OMansky, Matt

Delvaux, Matthew (Boston College)

[161] *Globalizing Graves: Necklaces and Networks of Consumption during the Viking Age*

Viking Age graves typically contain two types of exotic goods: coins and jewelry. Coins have long dominated discussions of early medieval economics because they have been understood as being closely linked to exchange. Two factors militate against this one-sided approach. First, coins appear alongside jewelry either as pendants worn singly or as parts of necklace groups. Second, ornamental objects appear in coin hoards, and beads in particular are attested in written sources as a means of payment. Bead assemblages therefore offer an important means for reassessing the long-distance dimensions of early medieval life.

This paper will survey the issues at stake in introducing beads to these discussions, presenting a summary of current research agendas and highlighting the significance of long-standing questions about early medieval economics. The majority of this paper, however, will focus on developing a methodological approach to challenge and complement the prevailing currents of previous scholarship. Building on recent studies that have argued that medieval exchange and production sites developed not as cores with local peripheries but rather as nodes in both local and long-distance networks, I will argue that beads represent points of consumption that likewise functioned as nodes in networks embracing both local and interregional contacts.

Demarest, Arthur (Vanderbilt University)

[26] *"Commodification," Exchange, and Changes in Maya Political Economy on the Eve of the Classic Maya Collapse*

Initial hypotheses on the port gateway city of Cancun envisioned it functioning within a "normal" Classic Maya economy, albeit with a particular emphasis on import/export of sacred goods, (e.g., jade, pyrite, probably quetzal feathers). After 15 years of excavation and intensive lithic and ceramic studies, however, it appears that after 760 A.D. Cancun shifted to a different form of economy almost entirely based on commodities production and long-distance exchange. Evidence demonstrates massive obsidian importation, processing, and exportation, yet with little consumption at Cancun outside of its peninsular epicenter. After 786/790, jade preforms were produced there but treated as a standard commodity, not a sacred nor an inalienable good, and jade preforms were for export with remarkably little local consumption in any area of the city. These seemingly counter-intuitive patterns are actually the norm in economics with change in the value and even ideological significance of many commodities along the chain of extraction, production, and exchange systems. The "commodification" of even jade and the distributional evidence on architecture, ceramics, and lithics in the 760–800 period also fit common patterns of control of commodities by elite merchants and suggest changes in political economy that may have profound implications for the "Classic Maya Collapse."

[26] Chair

DeMarrais, Elizabeth (University of Cambridge)

[105] *Understanding Heterarchy: Landscape and Community in the Northern Calchaquí Valley, Argentina*

This presentation explores landscapes of heterarchy, investigating the ways that past peoples inhabited a south Andean landscape. In the northern Calchaquí Valley of Argentina, before the Inkas, power relations were predominantly decentralized and spatially extensive. As a consequence, lived experience, the built environment, and the wider landscape both constituted and reproduced a distinctive social order and cultural logic. Using data from regional survey, I argue first for a habitus that emphasized face-to-face interactions and informal alliances on one hand, and movements to foster long-distance exchange relationships on the other. Second, I show that rituals and collective activities (and their settings) assembled far-flung communities, creating shared experiences that helped to foster solidarity. Third, I highlight the ways that social relationships were mediated across distances, using elaborately decorated objects, especially pottery and textiles. Broader theoretical aims include a deeper understanding of the dynamics of heterarchy through new insights into lived experience in this Andean landscape.

[248] Discussant

Dematte, Paola (RISD) and Paola Demattè (Rhode Island School of Design)

[175] *Ritual Landscapes in Prehistoric China*

In China, rock art is often found in areas considered peripheral to the so-called cradle of Chinese civilization. However, its patterns of landscape and space use are not remarkably different from those of established religions or political institutions whose artistic production in the landscape is generally not understood as "rock art." Historic Taoist or Buddhist rock carvings and Confucian cliff inscriptions are also associated with travel routes (land, sea, or river) or remarkable landscape features (mountains, cliffs, shores) that have acquired religious or political significance. An analysis of these sites will show that the creation of religious landscapes follows similar patterns in all this cultural manifestations.

Demattè, Paola [175] see Dematte, Paola

DeMuth, R. Carl (Indiana University - Bloomington)

[284] *Finding the Children in Communities of Labor – Initial Results from the Coal Heritage Archaeology Project*

This paper reviews recent archaeological research at Tams, West Virginia—a former coal company town—which revealed a significant number of children's toys such as marbles and dolls/figurines. Artifacts such as these can offer important insights into the lives of children in company towns, an aspect that is often overlooked in labor archaeology. In terms of community involvement, these artifacts are both important as well as interesting. Most former residents interested in the project only lived in Tams as children, and these artifacts can speak directly to their experiences.

This research was carried out as part of the Coal Heritage Archaeology Project, a collaborative multi-institutional effort aimed at using community archaeology to construct positive alternate narratives of Appalachian heritage to replace common negative stereotypes of the region. This paper contributes to these goals through the examination of children in former coal company towns.

Dennehy, Timothy, Jacqueline Fox (Arizona State University) and Michael Smith (Arizona State University)

[171] *Housing Inequality in Premodern Cities*

We calculate Gini indices for house size in two samples of premodern cities. The first sample consists of several cities included in the transdisciplinary comparative project on spatial inequality called "Service Access in Premodern Cities." That project examined the relationship between inequality and a set of systematically coded contextual variables—such as economic development and governance mode—in a sample of ancient and historical cities. The current study uses only those cities that have household-level data allowing calculation of a Gini index for house size. Our second sample consists of a number of additional early cities that also provide comprehensive household level data, but which were not included in the earlier study. Taken together, our analyses of these samples reveal considerable variation in the degree of wealth inequality in premodern cities, and allow us to suggest some of the contextual factors associated with divergent levels of inequality. Finally, we experiment with using the Gini index in a novel way to characterize inequality in spatial access to service facilities.

Dennis, L. Meghan

[287] *Bad Behavior and Good Guidelines: Applying the Society for American Archaeology's Principles of Archaeological Ethics to the Performance of Archaeology in Videogames*

Within videogames, archaeology is often not itself a focus, but provides a flavor or character-defining style based on pre-existing stereotypes of the discipline as presented in other forms of popular culture. This frequently results in utilizing the practice of archaeology as a form of secondary content, designed to provide a financial or game-play bonus to the player character, while allowing access to objects of cultural patrimony and license to commodify those objects. Through an application of SAA ethical guidelines to current examples of archaeological practice in videogames, public perceptions of how archaeology and archaeologists function can be analyzed, and potential mitigations can be devised.

[250] Discussant

Dennison, Meagan (University of Tennessee, Knoxville), Mark Freeman (University of Tennessee, Knoxville) and Jeffrey Navel (Tennessee Valley Authority)

[84] *Digital Archive of Archaeological Dog Burial and Metric Data of the Americas*

Integrating large amounts of data into streamlined, coherent datasets is a popular trend among archaeologists today, as these large datasets allow for the recognition and analysis of regional temporal and spatial trends. This paper presents an overview of a large dog burial dataset for the southeastern United States, where dog burials have been encountered on archaeological sites dating from about 8,000 years ago through the historic period. The information recorded includes contextual information concerning the burial environment, temporal component, and demographic information for both dogs and associated humans. Here, we present a cultural historical framework that focuses on the geographic and temporal trends of this practice in the southeastern United States.

[84] Chair

Dennison, Mark [129] see Hirth, Kenneth

Dennison, Rory (University of Illinois at Chicago)

[252] *Connected Kilns: Examining Interconnections of Trade in Southern China and the Philippines using LA-ICP-MS*

This research, part of an ongoing dissertation project, examines a network of maritime trade between imperial China and southeast Asia by considering issues of both production and distribution through the comparison of the chemical signatures of paste from porcelain samples obtained through Laser Ablation Inductively Coupled Plasma Mass Spectroscopy (LA-ICP-MS). Porcelain samples have been collected in the Philippines, and porcelain and clay samples have been collected from kiln and habitation sites in southern China. This is a vast network, so the scalar nature of this work, looking at local, regional, and interregional systems is important in explaining the process involved. While part of a larger discussion on the larger network and connections involved therein, this research will, in particular, present results examining the differentiation and overlap of kiln sites from southern China (such as Dehua, Lulin, Gou Tou Shan, and Zhangzhou wares), as well as from an associated habitation site. This research highlights the potential of such an approach and produces results which show the interaction of local kilns within a larger regional framework.

Depalmas, Anna (University of Sassari) and Francesco di Gennaro (Archaeological Superintendency of Calabria)

[125] *Supper's Ready. Preparing and Cooking Food in Italian Protohistory*

The paper focuses on some aspects of food production and preparation of meals in the poorly equipped context of the protohistoric village in Italian territory. Some arrangements that have already been observed or reconstructed on archaeological basis, specifically when connected to particular found tools are discussed. With specific reference to the Italian protohistory, research on these items has been sometimes supported by ethnographic comparisons. In this search, some already stated hypotheses, like those regarding the equipment of the "apennine civilization" are taken into account as well as aspects related to the production of specialized vessels in Nuragic Sardinia. In several Bronze Age settlements, examples of cylindrical pots with an inner continuous strip have been found; among the excavation findings is even more evident the presence of pottery cones with hollow bases and densely perforated walls. In archaeological literature, such vessels—in association with cones—are considered functional to the boiling of the milk or of a liquid, however, that, during the boiling process, tends to spill from the container. Other observations will be made about specialized pottery shapes which allow to hypothesize some specific functions of preparation and/or cooking foods as the probable distillation stills.

Des Lauriers, Matthew [245] see Merrick, Dustin

Des Lauriers, Matthew (California State University, Northridge) and Dustin Merrick (California State University, Northridge)

[277] *Feedback Loops, Demographic Circumscription, and Changing Labor Organization on Isla Cedros, Baja California, Mexico*

Discussions of resilience theory (see Redman 2005; Folke 2006; and others) and its application to ancient human ecological systems view the process of cultural change as perpetually dynamic and involving patterns reliant upon a wide range of underlying factors constantly altered by a variety of catalysts and forces. This differs from more linear arguments of transformation by unidirectional external forcing. One such complex transformation occurred on Isla Cedros Baja California, in the Late Holocene between a period of village formation around A.D. 400–600 and a period of heightened population aggregation and alteration of basic labor organization from ~1150–1732. Montero Phase villages were built at ideal locations for access to water, ecotonal boundaries, and ease of travel to a variety of insular terrestrial resource zones. Houses during this period show dramatic differences in size and are relatively large (~6–13 m in diameter). Following a period of dramatic change, later Huamalgüefío Phase villages are located in completely different landscape settings and show virtually no variation in the size of their small houses (3.5–4 m in diameter), while demonstrating dramatic population aggregation. Some Huamalgüefío villages contain literally hundreds of these small house features. We critically examine several hypotheses to explain this transformation.

DeSantis, Larisa [205] see Tung, Tiffany

DeSouza, Jonas (University of Exeter), Mark Robinson (University of Exeter), Jose Iriarte (University of Exeter), Francis Mayle (University of Reading) and Paulo DeBlasis (Universidade de Sao Paulo)

[167] *Understanding the Occupation History of Oversized Pit Houses in the Southern Brazilian Highlands: Bayesian Modelling and High Resolution Chronology of the Baggio 1 Site*

The function of the oversized pit houses constructed by southern proto-Je groups in the southern Brazilian highlands has been a matter of debate for decades. In this paper, we contribute to the debate by presenting a unique sequence from House 1 of the Baggio 1 site in Campo Belo do Sul, Santa Catarina state. For the first time, we obtained a large number of radiocarbon dates for twelve occupation floors in an oversized pit structure. We applied Bayesian modelling to develop a fine-grained chronology of the occupation history of House 1. This allowed us to tie observed changes in material culture, maintenance practices, and abandonment modes in House 1 to an absolute, high resolution chronology.

Desrosiers, Sophie (EHES-CPH, Paris)

[135] *Textile Conceptual Ideas as Mobility Indicators between Highlands and Coast, Central Andes, c. 200 B.C.–600 A.D.*

Textiles are important artifacts when looking at mobility since they constitute a matrix of complex conceptual ideas, are important identity markers, and they travel easily with their owners. Precolumbian textiles have seldom been preserved in the wet Andean highlands, making it difficult to evaluate their past diversity and to identify them among the vast quantity of pieces discovered on the arid coast of Peru. Nevertheless, combining the study of present highland weaving practices with the observation of precolumbian artifacts, it has been possible to demonstrate that part of the famous Paracas Necropolis embroideries and of the Lima culture iconography respectively found on the south and central coast of Peru are reinterpretations of textile designs woven in the highlands at the end of the Early Horizon and during the Early Intermediate Period. These two cases indicate that people and their textiles moved between somewhere in the highland and the coast. Recent archaeology and linguistic studies will be utilized to localize and identify the highland weavers whose art met so much success on the coast.

Detry, Cleia [49] see Dias, Rita

Devenport, Dael and Shelby Anderson (Portland State University)

[210] *GIS Predictive Modeling to Identify Archeological Vulnerability to Climate Change Along the Coasts of Western Arctic National Parklands in Alaska*

A GIS-based predictive model helps guide archeological inventories and mitigation measures by identifying areas of archaeological interest subject to climate change threats. This multi-year, large-scale inventory and vulnerability assessment of coastal archeological resources at Bering Land Bridge National Preserve and Cape Krusenstern National Monument is designed to rectify the lack of basic inventory knowledge and complete a vulnerability assessment. The remote 1,600 km-long coastal areas of the Western Arctic National Parklands in northwest Alaska are experiencing accelerated environmental changes such as rising sea levels, storm surges, thawing permafrost, and erosion. Such changes adversely impact some of the most significant archaeological sites in North America. Loss of these resources is important not only because of damage directly to them, but also because information contained in these archeological records provides invaluable insight into the dynamics of how humans interacted with their environment and adapted to change across a broad timescale. We used a combination of archaeological and environmental spatial data to develop a regional predictive model, which was subsequently tested and refined by field work. This combination of field and desk based research resulted in a model that can be used to focus future archaeological research in this region and further afield.

Devio, Jessica (University of Texas at San Antonio) and M. Kathryn Brown (University of Texas at San Antonio)

[270] *New Evidence for Late Classic Maya Food Processing at Xunantunich, Belize: Preliminary Results of Starch Grain Analysis*

At Xunantunich, Belize, thousands of worked chert bladelets were found in Late to Terminal classic deposits near residences in Groups D and E. Initially, these implements were thought to represent tools used in craft production of slate or other materials. However, little crafting debris or debitage was encountered within deposits where the tools were recovered. Edge-wear analysis suggests the tools were used on organic material, either hardwood or softer materials like tubers. Starch grain analysis was employed to determine whether the tools were used to grate manioc or other tubers. Underground plant products are difficult to identify archaeologically due to poor preservation of macroremains and are underrepresented in discussions about Maya subsistence. Fortunately, starch from these plant parts often preserves on stone tools. The large number of washed and unwashed worked bladelets recovered from Xunantunich provides an ideal assemblage for study. The residues extracted from the chert bladelets were compared to experimental chert flakes used to grate manioc, macal, sweet potato, and cocolmeca. This paper presents the surprising results of this study. We argue that these tools were not the product of crafting activities, but rather, the remains of subsistence related activities, specifically intensive tuber processing.

Devlin, Sean (University of Minnesota)

[70] *The Value of Colonialism as a Model for Anglo-Caribbean Material Practices at Emancipation*

Archaeologies of colonialism have presented models that draw out the complex political interactions of meaning making via material practices that take place at the intersection of daily lives between populations of colonized and the colonizer. Traditional approaches to the archaeology of slavery within the Anglo-Caribbean have tended to transpose these categories onto enslaved Africans and white settlers. The result is a tendency to emphasize meaning making through material in terms of disciplinary, imposed by whites, or resistive, traditional African, practices. This project seeks to problematize this classification, by exploring the socio-political dynamic that occurred within these societies in the decades leading to Emancipation in the late eighteenth and early nineteenth centuries. Rather than resorting to a bifurcated model, this project attempts to draw out multiple arrangements of identities between the interests and identities of the planters, the enslaved, and metropolitans represented by missionaries. This more complex model suggests alternate meanings for materials traditionally associated with disciplinary practices using initial evidence derived from a village site associated with a Barbadian sugar estate.

[70] *Chair*

Dewan, Eve [90] see Harrington, Katherine

Dezi, Gina (Mashantucket Pequot Museum and Research Center) and Kevin McBride (University of Connecticut)

[61] *The Battlefield Archaeology of Domestic Sites: Wartime Production during the Pequot War (1636–1637)*

The Calluna Hill Site (59-73) is a small Pequot Village burned down by the English allied forces during their withdrawal from the Battle of Mystic Fort. Recent excavations and metal detector surveys indicate the site was occupied for only a few weeks prior to its destruction on May 26, 1637. The site's setting and faunal assemblage suggests the site was re-located away from the coast in anticipation of an English attack on Pequot territory. The artifact assemblage of re-processed brass and iron trade goods indicates the production of brass and iron projectiles, many examples of which were recovered from the battlefield. The site provides a unique opportunity to examine the relationship between battle-related objects and domestic sites during the Pequot War.

di Gennaro, Francesco [125] see Depalmas, Anna

Dias, Rita (ICArEHB-Universidade do Algarve)

[49] *The Use of Fish Vertebrae and Otoliths for Sclerochronological Analysis of a Mesolithic Shell Midden: Advantages and Limitations*

The onset of the Holocene in the Iberian Atlantic Coast is associated with the appearance of the Mesolithic shell middens, which reflected new subsistence patterns that have been commonly characterized by the intensification of aquatic resources exploitation. Recently, sclerochronological analysis of shell midden faunal remains has been seen as fundamental to infer climatic and environmental changes, human settlement, resource exploitation, and seasonal occupation.

However, fish bone, and especially otoliths, as a consequence of their chemistry and ultrastructure require certain conditions to survive. Methodological concerns and specific methods have to be used in archaeological sclerochronological analysis to address certain taphonomic and diagenetic processes and to ensure unbiased results.

Nevertheless, both structures offer a unique and valuable source of information to reconstruct human occupation patterns (season of capture) during the Mesolithic of shell middens in the Iberian Atlantic Coast.

[49] *Chair*

Diaz, Francisco (San Francisco State University)**[149]** *The Szőlő of Wrath: Hungarian Vineyards and Land Use in the 20th Century*

Understanding the land use history of an archaeological site is necessary for understanding the contextual state of the archaeological artifacts recovered through systematic excavation. Bronze Age cemetery excavation at Békés 103 in eastern Hungary presents some challenges, however, because multiple landowners and a long and varied history of land use parcels the site into archaeological deposits of differing and varied degrees of disturbance. Oral history provides an important source about land use history for explaining the present archaeological conditions and helps to inform excavation decisions. This paper consolidates information about known cultivation methods and property ownership using QGIS, providing a visual and spatial reference for further investigation. This undertaking not only provides information to help decide future excavation, but benefits public relations and provides a tool for outreach for the BAKOTA project to inform the present-day residents and stakeholders about the archaeological undertaking in their community.

Diaz, Diana (California State University, Northridge) and Danielle Kurin (University of California, Santa Barbara)**[206]** *Discerning Site Distribution and Settlement Patterns in Andahuaylas (Apurimac), Peru*

Archaeological scholarship in the Andahuaylas region of south-central highland Peru has documented the presence of three critical cultural occupations: Wari, Chanka, and Inka (ca. A.D. 700–1400). Previous investigations claim that environmental change may have influenced collapse and played a decisive role in resettlement patterns. Using spatial data from 86 surveyed sites, this study investigates how state collapse, reorganization, and environmental transformations influenced settlement patterns in the region. Nearest neighbor analysis and other GIS applications are marshaled to evaluate how regional site density, settlement location, agglutination, and cultural occupation varied over time. Preliminary results are used to address the nature of site abandonment as well as motivations for population aggregation. The study emphasizes the role social agency as findings suggest human settlement on the landscape may be strongly predicated by the social milieu than macro climactic conditions alone.

Dibble , Harold [177] see Steele, Teresa

DiBenedetto, Katelynn [64] see Ferguson, Jeffrey

Dijkhoff, Raymundo [220] see Kelly, Harold

Dillehay, Tom [31] see Prieto, Gabriel

Dillehay, Tom**[107]** *Past and Present Andean Night Moon Rituals*

Two nighttime rituals, one archaeological and the other ethnographic, are presented for the Andean region of South America. The archaeological case is the 7,500–4,000 year old littoral mound site of Huaca Prieta on the north coast of Peru where a very dense accumulation of charcoal resulting from fires and rituals formed the site. Recovered at the site were reed torches suggesting nighttime rituals. Today, shamans or curanderos from the north coast still occasionally use the site at night under a clear moon to make coca offerings (pages) and to pray for productive fertility from the sea and the land. The ethnographic case is the Mapuche shamans or machis of south-central Chile who perform nighttime rituals to communicate with the gods and ancestors. The wider political and community and interactive implications of these two cases, set within the Andean world and within broader anthropological concepts, are discussed and compared.

Dillian, Carolyn (Coastal Carolina University) and Charles Bello (FEMA)**[159]** *Charles Conrad Abbott and the Evolution of Humankind*

Charles Conrad Abbott is most well known for his participation in the “Great Paleolithic Debate” of the late nineteenth century, in which he used archaeological evidence to propose an independent evolution of humans in the New World and the Old World. His theories were soon dismissed as incorrect, but for a brief time, he gained scientific renown for his scholarly publications. However, his theories must be examined within the framework of scientific thought during this time. In 1859, Charles Darwin published *On the Origin of Species*, which had wide-reaching implications for the scientific world. Charles Conrad Abbott, who was a nephew of paleontologist Timothy Conrad, would have been immersed in this literature at a relatively young age and strongly influenced by the scientific debates on human antiquity. The context and influences that affected his decision to pursue a life as a naturalist and archaeologist are explored here, and the scientific milieu of the late nineteenth century provides an important starting point for understanding Abbott's infamous, and for a brief time influential, theories about the origins of modern humans in the New World.

Dillon, James [217] see Huang, Yongsong

Dilyard, Jeffrey [112] see Redmond, Brian

DiNapoli, Robert (University of Oregon)**[296]** *Resource Structure, Economic Defendability, and Conflict in Rapa Nui and Rapa Iti, East Polynesia—An Agent-based Modeling Approach*

East Polynesian populations are closely related both culturally and genetically, yet their islands are environmentally diverse. The common ancestry and strong environmental differences make East Polynesia uniquely suited to the study of divergent sociocultural evolution. Following human colonization, populations diverged in subsistence practices, settlement patterns, ritual architecture, intensity of competition, and social organization. Here, we explore differences in the intensity of conflict on two marginal East Polynesian islands—Rapa Iti and Rapa Nui—where conflict and territoriality varied dramatically. We argue that a human behavioral ecology ‘economic defendability’ model (EDM) explains these differences. EDM predicts degrees of territoriality will emerge in ecological settings where resources are both dense and predictable. We test these predictions using an agent-based model incorporating archaeological data on the location and productivity of subsistence resources examining the explanatory expectations of the EDM.

[296] *Chair*

Diserens, Kasey (University of Pennsylvania), Tiffany Cain (University of Pennsylvania) and Richard Leventhal (University of Pennsylvania)

[54] *Heritage That Gives Back: Community Development and Heritage Preservation in Tihosuco, Mexico*

The Heritage Preservation and Community Development Project in Tihosuco, Quintana Roo, is a community-based anthropological program that seeks to combat the visible economic and social inequality in the region. Such inequalities exist both between the tourists and laborers as well as between the larger economic centers and peripheral indigenous communities. While the project seeks to bridge some gaps by creating jobs and a small-scale tourism market, we also explore ways to have an impact upon the social disparity and to empower the community with a strong voice that reinforces their claim on the history of the Caste War as a central part of their heritage.

This paper attempts to move the discussion surrounding the preservation of heritage out from the margins of the discourse on economic and social development. Generating strategies for the protection and management of cultural assets, both tangible and intangible, can lead to sustainable models of development for communities like Tihosuco.

This project moves away from the seasonal labor model of archaeological fieldwork and economic growth. By shifting out of that structure, we work with Tihosuco to create a project with long-term benefits to the community and region.

Disque, Candice [67] see Lea, Trevor

Disque, Candice (New Mexico State University)

[289] *Social Organization within a Tower Complex in Southeast Utah: A Landscape Approach*

Through architecture, the Ancestral Pueblo people expressed their ideas and beliefs in many different ways. Towers have long been an enigmatic presence in the southwest when role and function are in question, though focus should not be placed solely on a single explanation if one is to understand the people. Rather, interpreting the entirety of a site allows for a more holistic view into the social landscape. Ongoing research is being conducted at site 42SA4998 in the Alkali Ridge region of southeast Utah to understand the function of tower complexes with regards to social organization. By examining the architectural layout and masonry of the towers, interpreting the relationship between the towers and accompanying structures, and spatially analyzing the complex with respect to nearby sites, we begin to understand that it is not just the tower which conveys ideas, but that the complex as a whole disseminates information about social organization. Additional analysis into the function of the tower complex includes artifact density and distribution to detail site activities, and extensive survey and mapping of the site. This paper explores the multi-faceted function of tower complexes and how ideas about social organization can be extrapolated through a landscape approach.

Dixon, Christine (Green River College)

[32] *Rising from the Ashes: Power and Autonomy at Cerén, El Salvador*

On the side of a road in El Salvador in 1978, the life of Payson Sheets and the remains of the Classic Period Maya settlement of Cerén fatefully intersected. When Sheets first understood the actual antiquity of the site buried by volcanic ash to be 1,400 years old, what could not have been known was the decades of research that would ensue, nor the wide-ranging impacts that such findings would have for household archaeology, commoner studies, and archaeological method and theory. Sheets has directed research at the UNESCO World Heritage site of Cerén for over three decades. Through his dedication, 11 earthen structures that sit among their agricultural fields have been excavated. Theoretical and methodological contributions of more recent work at Cerén are discussed through the lens of key findings. This paper pulls together recent research at the site, initiated in 2005 with geophysical explorations, followed by major research projects in 2007, 2009, 2011, and 2013. Our understanding of ancient Maya lifeways has been enormously enhanced through the discovery of manioc fields and an earthen sacbe, allowing us to better reconstruct social and political power and autonomy within the community.

[53] *Chair*

Dixon, Christine [107] see Gonlin, Nan

Dixon, E. James (Maxwell Museum)

[249] *Discussant*

Dobereiner, Jeffrey (Harvard University)

[178] *Are Two Heads Still Better than One? Considering a Unified Origin for American Social Complexity*

For half a century, scholars have listed Mesoamerica and South America alongside the Near East, Egypt, China, and India as independent loci of emergent social complexity. Yet, recent scholarship has placed an increasing emphasis on the role of multi-regionalism and mobility in the emergence of world civilizations. These theoretical shifts, alongside suggestive findings of agricultural, material, and ideological unity in the Formative Americas, require us to ask: Were pathways to complexity in Mesoamerica and South America truly independent? How does treating the Americas as a unified locus of social complexity impact comparative approaches to civilizations of the Old and New Worlds? In this paper, I explore the theoretical shift toward regional approaches to primary Old World civilizations, and how expanding their application is poised to transform how we understand the Americas. This offers a unifying anthropological narrative to the diverse papers of this session and contextualizes their contribution to studies of emergent social complexity worldwide.

[178] *Chair*

Dobney, Keith [160] see Weyrich, Laura

Dockrill, Stephen [210] see Bond, Julie

Dodge, Robyn (The University of Texas at Austin)**[27]** *Hun Tun Household Context and Social Complexity*

The ancient Maya site, Hun Tun, is located in northwestern Belize and serves as a platform of inquiry into social complexity at the household level. This paper addresses ancient Maya commoners in household contexts while discussing data that are pertinent to ideas of household identity, social formation, and household production by re-evaluating conventional notions of domestic space. The analysis of everyday objects in domestic contexts contributes to this discussion. Major archaeological features and monuments at Hun Tun will be discussed as they pertain to hinterland settlements and household contexts. Particular features such as those found at Hun Tun challenge existing ideas about the function of hinterland domestic space. A discussion of function is crucial to understanding the role of households at Hun Tun in forming social complexity. In tandem with features, material culture is also discussed in context. Knowledge about the function of domestic activity areas serves to tie Hun Tun with the larger ancient Maya polity at La Milpa. Ceramics, various lithic material assemblages, and small find material culture, are among the recovered artifacts discussed here. These data suggest a broad range of access and exchange of materials at Hun Tun.

Dodrill, Taylor, Mila Lassuy (University of Oregon), Nicholas Jew (University of Oregon) and Scott Fitzpatrick (University of Oregon)**[182]** *Stable Oxygen Isotope Analyses and Paleoenvironmental Reconstructions from Mollusks in Palau, Micronesia*

In Palau, Micronesia, marine resources, such as shellfish, played a vital role in subsistence for millennia. At the Chelechol ra Orrak site, nearly 100 shellfish species have been identified in archaeological assemblages, but there is a dearth of data on nearshore paleoecology or prehistoric shellfish foraging practices. To address these issues, we employed stable oxygen isotopes ($\delta^{18}\text{O}$) on select shellfish species, which has been successfully applied in many coastal regions to reconstruct paleoenvironments and sea-surface temperature (SST). In this study, modern shellfish samples were collected from intertidal zones near the site and ambient SST recorded. We then used X-ray diffraction on the samples to identify the skeletal biomineralogical composition, which provides the necessary information to select the proper isotope-to-SST conversion formula. Calcium carbonate samples were milled from modern shells and the $\delta^{18}\text{O}$ results paired with ambient water temperatures using several $\delta^{18}\text{O}$ -SST conversion equations. Using the most appropriate formula, these equations were then applied to $\delta^{18}\text{O}$ samples from several prehistoric shells to reconstruct a high-resolution SST. Results provide useful baselines for examining a host of issues related to prehistoric subsistence strategies in Palau and how environmental changes may have influenced the availability and productivity of various molluscan taxa through time.

Doering, Travis (University of South Florida - AIST)**[264]** *Ritual Deposits at El Marquesillo, Veracruz: Examples of Long-Term Collective Social Memory*

The settlement of El Marquesillo in southern Veracruz was inhabited during the Mesoamerican Early Formative Period, emerged as an Olmec center during the Middle Formative Period, and remained occupied throughout the remainder of the precolumbian period. During the late Middle to early Late Formative Period, an Olmec monumental tabletop throne was ritually terminated and deposited. This interment was accompanied by two substantial offerings suggestive of a feasting event. More than a millennium later, during the late Classic Period, three more meticulously placed offerings were cached nearby. Based on various lines of evidence, these later offerings appear to have been expressions of long-term social memory designed to recall the Formative Period Olmec activities. This paper reviews the details of these depositions and their potential relationships.

Doering, Jaclyn, David Hyde and Krystle Kelley**[273]** *Expansion of an Eastern Shrine at the Tapir Group of the Medicinal Trail Community in Northwestern Belize*

Excavations within the Tapir Group at Medicinal Trail, a Maya hinterland community in northwestern Belize, have revealed evidence for multiple phases of expansion of both Structure B-1, a large pyramidal structure on the eastern side of the courtyard group, and the plaza platform on which it rests. The Tapir Group is a relatively large, formal Plaza Plan 2 courtyard group (as defined by Becker). Excavations indicate that Structure B-1 was expanded at least twice and, in order to accommodate the enlarged shrine, a new platform extension was constructed off the eastern side of the plaza platform. Additionally, there appears to have been a final construction made off the southern side of the shrine, possibly by later inhabitants, using reclaimed cutstones from the courtyard group. This poster will summarize the various phases of construction and discuss the importance of eastern shrines in the Maya Lowlands.

Dolan, Patrick (Washington State University), Colin Grier (Washington State University), Markussen Christine (Center for Advanced Spatial Technologies - Unvers) and Katie Simon (Center for Advanced Spatial Technologies - Unvers)**[124]** *Magnetic Gradient Survey of a Hunter-Gatherer Plank House Village at the Dionisio Point Site, Northwest Coast of North America*

We present the results of magnetometry survey of four houses at the Dionisio Point site, a 1,500-year-old settlement in the Gulf Islands of southwestern British Columbia, Canada. Intensive excavations have uncovered much of one of five substantial houses. It is the remains of a shed-roof plank house, the winter residence of a large multi-family corporate group. We suggest that the rest were contemporaneous households organized in a similar fashion and that Dionisio likely constituted an example of the large, permanent, winter villages that are known on the coast archaeologically and ethnographically. We draw upon the results of the magnetometry survey to further evaluate this possibility. The survey reveals strong anthropogenic magnetic anomalies at Dionisio Point. Their distribution corresponds to the expectations of a behavioral model of shed-roof house organization. The spatial distribution of anomalies supports the thesis that the Dionisio Point settlement was a residential community comprised of large multi-family shed-roof households. Over the course of its roughly two-century occupation, this village was composed of five large dwellings built on common architectural principles, supporting previous inferences concerning the social and economic centrality of the domestic group in local community organization.

Dolan, Sean (University of Oklahoma)**[168]** *Blue Birds and Black Glass: Traditions and Communities of Practice during the Coalition to Classic Period Transition on the Pajarito Plateau, New Mexico*

Multiple lines of anthropological evidence demonstrate people moved from the northern San Juan region into the Pajarito Plateau in the late thirteenth and early fourteenth centuries A.D. This Coalition to Classic Period transition was a time of immense demographic and social reorganization that shaped the historical and cultural trajectories for the future of Ancestral Pueblo people. As a consequence of the influx of diasporic households, how did this transformation affect traditions of obsidian source-use on the Pajarito Plateau prior to, during, and after the transition? I discuss the results of previous XRF analyses on obsidian artifacts from projects at Los Alamos National Laboratory and Bandelier National Monument to put the data into the larger social context of the northern North American southwest. Using multiscalar perspectives, I demonstrate that people started new traditions of which obsidian to use after the transition in the northern Tewa-speaking region near Los Alamos, whereas earlier traditions persisted to the south in the Keres-speaking region in Bandelier. This could reflect changes in communities of practice as a result of transformations in circumscribed social and territorial boundaries of Jemez obsidian procurement and technological agency.

Dollarhide, Eli (New York University)**[143]** *Impressions of an Early Urban Landscape: Interpreting a Bronze Age Ceramic Motif from 'Amlah, Oman*

This paper explores one prominent material correlate of an interconnected ancient Near Eastern world: a category of ceramic vessels termed incised greywares. Archaeological excavations have revealed a significant corpus of incised greyware vessels from across the mid-third millennium B.C. Near East; they are found in contexts as diverse as the ancient city of Susa to small, communal tombs across the Omani peninsula. The primary focus of this paper lies in investigating an assemblage of this ceramic type from the site of 'Amlah, located along the Wadi al-Ayn in the interior of Oman. This research analyzes the physical characteristics of the 'Amlah greyware assemblage and finds evidence for two different groups of production that share common forms, texture, and decoration. Examining one of these motifs—the sagging lintel—in detail, I offer a reading of the incised greywares as bearers of a uniquely Mesopotamian architectural form, referring to recent work on the earliest urban, littoral landscape in the southern marshlands of the Tigris and Euphrates. The 'Amlah incised greywares offer insight into the movement of an environmentally-specific image across radically diverse landscapes and provides evidence for deep levels of interconnectivity across even the smallest settlements of third millennium B.C. Oman.

Domeischel, Jenna (Eastern New Mexico University)**[265]** *Eastern New Mexico University Archaeological Collections*

Home of the Clovis type-site and the Blackwater Draw Museum, as well as the Agency for Conservation Archaeology, Eastern New Mexico University serves as a repository for varied collections from within the state of New Mexico and from farther afield. Numerous well-known and respected archaeologists have held positions at the university and conducted fieldwork in the region, leaving their archaeological materials in trust. Additionally, the USDA Forest Service and the U.S. Army Corps of Engineers store many regional collections in the curation facility, including collections from bordering states such as Arizona and Texas. Materials housed in the repository are both regionally and temporally diverse; from the Paleoindian Period through the Historic Period, and from the western borders of the southern Plains to the heart of the southwest, including Ancestral Puebloan sites. Collections are not limited to artifacts; many contain associated paperwork, including field notes and journals, as well as photographs, slides, and other media. Research potential is enormous; in the past, these collections have been accessed to provide data for theses, dissertations, and independent research resulting in professional publications. Additionally, a variety of current research projects are ongoing.

Dominguez, Ma. del Rosario [179] see Folan, William

Domínguez, Miriam (University of Florida)**[204]** *After 3,000 Years, the Enduring Site of Potrero Mendieta is Still Overlooking the Jubones River Basin*

The archaeological study of intercultural encounters in the context of a geographically interstitial zone, such as the Jubones River Basin in present-day Ecuador, elucidates the interconnectedness of multiple historical processes and evaluates the notion that such convergences have existed since antiquity. Preliminary archaeological fieldwork and analysis of the material culture from Potrero Mendieta revealed monumental architecture, and ceramic and lithic traditions that denote cultural associations with both the Formative populations from the Pacific coast of Ecuador and those of the eastern lowlands. It is a platitude to assert that after a three-season program of archaeological investigation at the site, there is no resolution on the nature of Potrero Mendieta. This poster illustrates just a glimpse of the tip of the iceberg.

Donahue, Randolph (University of Bradford), Daniela Burrioni (Leeds Beckett University) and Anders Fischer (Agency of Culture, Denmark)**[214]** *Microwear and the Resolution of Post-Depositional Modification of Danish Underwater Mesolithic Deposits*

It has been shown that the amount of rounding of a dorsal ridge of an unused flake is a good proxy measure for the amount of post-depositional modification by sediment movement. The technique has been applied often by the Lithic Microwear Research Laboratory to assess the suitability of an assemblage for study of tool use. Here, we report on the application of the technique to a unique problem. Orehoved is a port located in southern Denmark. The repositioning of a bridge carrying traffic between Hamburg and Copenhagen impacts on access of the port channel to ships. The channel is to be repositioned and an archaeological assessment was undertaken to assess the impact of different access routes to the port. The harbor and channel routes were test pitted with the sediment (2 m³) from each test pit brought onboard the vessel to be sieved. Artifacts came from at least two distinctive layers. Ridge wear analysis demonstrates that the artifacts showed a variety of conditions from appearing extremely fresh to showing extreme rounding. Spatial and statistical analysis shows that there are horizontal and vertical differences in the quantity of high quality material. The analysis provides a guide for current underwater excavation.

Donahue, Randolph [269] see Evans, Adrian

Donop, Mark (University of Florida), Neill Wallis (Florida Museum of Natural History) and Ann Cordell (Florida Museum of Natural History)**[8]** *Production and Provenance of Weeden Island Mortuary Effigies from the Woodland Gulf Coast*

Technofunctional analysis, neutron activation analysis (NAA), and petrographic analysis were employed to map the origins of rare mortuary effigies from Palmetto Mound (8LV2) on the Gulf Coast of Florida to better understand how the production and distribution of Weeden Island (ca. A.D. 200–1000) religious paraphernalia was related to social interactions and emergent complex societies. Palmetto Mound is a mortuary facility composed of mounds and ramps on a small island directly west of the large, arcuate Shell Mound (8LV42) dated primarily to the Weeden Island Period. The relationship between religious practices and the heightened social complexity in the region indicated by increased communal aggregation, burial treatment differentiation, and monumentality is poorly understood. Weeden Island ceramic effigies of plants, animals, and humans were limited to mortuary contexts and produced at unknown and possibly restricted locations. Limited production and access to these mortuary items may indicate that incipient social inequality was tied to religious practices. Fourteen effigies from the Florida Museum of Natural History (FLMNH) were measured for technofunctional characteristics and 3D imaged, then sampled for NAA and petrographic analysis to determine elemental composition and paste characterization. The results were used to create a map that illustrates a ritual network of interaction.

Donovan, Erin [112] see Nolan, Kevin

Doolittle, William (University of Texas)

[130] *Discussant*

Dorland, Steven (University of Toronto)

[85] *Practicing Informal Apprenticeship: A Study of Learning Landscapes in 15th-16th Century Potting Groups in Upstate New York*

Pottery vessels that are produced by younger community members are highly effective avenues for addressing learning structures and social interactions of Great Lakes potting groups. Yet, learner actions are often isolated by archaeologists from the actions of experienced potters in the belief that variation is random and does not follow similar stylistic and manufacturing practices. Furthermore, traditional belief portrays pottery learning as passive transmission of knowledge, an interpretation that hinders understanding of potting interactions and removes the role of children in cultural production. This paper discusses the application of a proposed methodological framework to address learner vessels. Pottery samples from the A.D. 15th–16th century villages of Garoga, Klock, and Smith-Pagerie in upstate New York were assessed to systematically identify the relation between adult vessels and learner vessels. Rather than grounding indicators of skill in decorative aesthetics, the author evaluates shaping and modification methods and fine motor-skill execution. The author argues that Great Lakes potters participated in active forms of informal apprenticeship to acquire the needed knowledge to maintain longstanding potting traditions.

Dorland, Martha [225] see Turner, Daniel

Dorshow, Wetherbee [218] see Robinson, Jess

Doucette, Dianna [42] see Jeremiah, Kristen

Doucette, Dianna (The Public Archaeology Laboratory (PAL))

[42] *Chair*

Douglass, Matthew [94] see Wandsnider, LuAnn

Douglass, Kristina (Smithsonian National Museum of Natural History)

[269] *Resource Exploitation Patterns in the Velondriake Marine Protected Area, Southwest Madagascar, ca. A.D. 800-1900*

This paper discusses resource exploitation patterns at coastal archaeological sites located in the Velondriake Marine Protected Area in southwest Madagascar. In particular, it assesses the selective reliance of coastal communities on a variety of local habitats and taxa. The data are derived from regional survey and the excavation of five archaeological sites, including small rock shelters and open-air sites, ranging in date from ca. A.D. 800 to 1900. The data describe multiple narratives of human-environment interaction, each resulting in a distinct “impact” on the environment. Velondriake’s environmental history is characterized by frequent movement of people in and out of its coastal desert environment, both seasonally and over longer periods of time. Particularly considering the harsh and unpredictable climate of the region, this pattern of selective resource exploitation and frequent migration offers a long view of the resilience of socio-ecological systems in coastal southwest Madagascar. On-going research into the impact of human predation on populations of now-extinct elephant birds suggests that these ratites co-existed with human communities in the region far longer than previously thought.

Doumani Dupuy, Paula [134] see Hermes, Taylor

Downes, Jane [210] see Mainland, Ingrid

Downey, Jordan (University of Western Ontario)

[45] *The Rise of Authority and the Decline of Warfare in the Virú Valley*

The Salinar Period (400–200 B.C.) has long been considered a time of extensive warfare on the north coast of Peru. In the Virú Valley, fortifications and defensible settlements were common during this period, and warfare is thought to decline in the subsequent Virú Period (200 B.C.–A.D. 600). While Virú Period settlements were commonly built in open and undefensible locations, a new type of monumental fortification, the Castillo, first appeared during this time. These structures clearly served a strategic purpose and were a potent symbol of power, but they also housed large towns with public spaces. Was warfare actually less common in the Virú Period compared to Salinar, or did the nature of warfare in the valley change? Using a GIS-based approach, I show that the valley did indeed experience less warfare in the Virú Period and hypothesize that the changing nature of fortified settlements in the Virú Period can be explained by the development of a strong, centralized authority that unified the valley command and ensured that warfare was not conducted within the valley itself.

[45] *Chair*

Downs, Lauren [67] see Van Pool, Todd

Downs, Lauren

[275] *Habitual Postures of the Medio Period Casas Grandes People: A Comparison of Visual Art Representations and Skeletal Data*

One of the most distinctive forms to come out of the Medio Period (1200–1475 A.D.) Casas Grandes ceramic tradition was human effigy vessels. These vessels exhibit primary and secondary sexual traits, and the males and the females are seated in different postures. The males are usually seated in a squatted position, whereas the females typically sit with their legs straight out. To see if these vessels reflected real-life habitual postures, Medio Period skeletal remains from Paquimé were examined. Habitual actions leave markers on the skeleton, and one such marker is squatting facets. These facets occur on the tibia and talus, and as the name suggests, are indicative of habitual squatting. Given the postures of the male vessels, it was expected that the male skeletal remains would have a higher frequency of squatting facets. This is not the case. Instead, the female remains have a significantly higher frequency of squatting facets. This is possibly due to the posture assumed when grinding corn, a traditionally female activity. Perhaps the positions assumed by the vessels are the typical postures for social or ritual activities, and this is what is being depicted by the ceramic effigy vessels.

Doyle, James (The Metropolitan Museum of Art)

[59] *E-Groups and the Origins of Ancient Maya Exchange*

Many communities in the Maya Lowlands began when residents banded together to create E-Groups by leveling bedrock, paving over large plazas, and building modest pyramidal architecture. This presentation traces the spread of E-Groups after 700 B.C. as a product of two trends: the replication of a primordial place characterized by solar movement and a central living mountain, and the social and commercial gathering of peoples to exchange goods and ideas on a regular basis. The people producing and exchanging things in E-Group communities built their practices into the architecture of the E-Group itself. The physical remnants of activities such as freshwater shell consumption, lithic biface reduction, and solid figurine making was purposefully deposited in the fill of buildings to imbue them with the lifeblood of exchange. Potters in the Middle and Late Preclassic periods (e.g., Mamom and Chicanel spheres) clearly shared information over vast distances, perhaps by traveling to and from different E-Group gatherings, judging by similar paste recipes, formal changes, and surface decoration techniques. E-Groups, then, can be viewed as the matrix from which Maya Lowland exchange arose and flourished during the time of the Classic divine rulers.

Doyon, Luc (Université de Montréal & Université de Bordeaux)

[176] *Morphometric Analysis of Aurignacian Bone, Antler and Ivory Projectile Points*

This study examines the morphometric variation of Aurignacian bone, antler, and ivory projectile points, the first continental-wide occurrence of hunting armatures made from animal material during the Early Upper Paleolithic. Morphometric analysis is a powerful instrument that separates and quantifies variation of both shape and size, thereby allowing exploration of both functional and stylistic variation of an object. Applied to armatures from the Western Mediterranean region (Grotte de l'Observatoire, Reclau Viver, L'Arbreda Cave) and the northern slopes of the Pyrenees (Aurignac, Tarté, Saint-Jean-de-Verges), morphometric analysis suggests the presence of three main volumetric templates replicated by the prehistoric artisans. Each template is associated with specific proximal and/or distal damage types. This suggests that morphometrically similar implements were hafted and used in similar ways. As would be expected, sites where the manufacture of projectile points is attested yield a greater number of complete points as well as specimens showing little sign of use. On the other hand, the specimens from assemblages from sites without evidence of primary manufacture and that are located at the extremities of the region are smaller and more fragmented, suggesting a higher intensity of use and resharpening prior to deposition.

Dozier, Crystal (Texas A&M University)

[255] *Maize Starch Taphonomy in Chicha Production: Experimental Results*

Starch granules can be recovered from a variety of archaeological contexts and have been used to interpret cooking technologies. This set of experiments investigated some taphonomic considerations to interpreting chicha (corn beer) production from starch granules. The first experiment examined how far the maize starch granules travelled from the grinding station. Starch could be recovered as far as 10 meters from the grinding site, with dense starch collections happening less than 40 centimeters from the mano and metate. The three conditions of grinding (outside, with wind; outside, against wind; inside, no wind) highlight the importance of context in interpreting the starch record. The second experiment examined the morphological changes in the starch granules through the malting, boiling, and fermentation stages of chicha production. Malted maize starch granules gelatinized at a much lower temperatures than non-malted cereal starches observed in other experiments. Due to the rapid gelatinization of malted maize starch granules, it is unlikely that chicha-related starch would be recovered in boiling, fermentation, serving vessels, dental calculus, or within the digestive system. Studying the chicha production stream, however, indicates that starch could be recovered from the grinding materials; morphologically, malted starch granules may be indicative of brewing technologies.

[40] *Chair*

Dozier, Crystal [40] see Sonderman, Elanor

Draeger-Williams, Cathy [287] see Parsell, Veronica

Drake, Stacy (The University of Texas at Austin) and Dorothy Ann Riegert (Texas State University)

[235] *Curation and Best Practice with Human Remains in Northwest Belize*

As of the summer of 2015, approximately 135 burials have been recovered and investigated through the Programme for Belize Archaeological Project (PfbAP) in Northwest Belize. Within the 270,000 acres of land on which the PfbAP operates, approximately 60 archaeological sites have been recorded and investigated. As the number of burials increases with new site identification and investigation, a need for data consolidation and accessibility has arisen. We aim to make this data more attainable through consolidating the burial records and inventory into a more accessible database. This coincides with an effort to practice best preservation methods, maintenance, and curation protocols as it relates to human remains. We are currently working to establish analysis and storage standards and a running accession process for the PfbAP human remains collection. Here, we address the beginnings of this project, the accomplishments and mishaps experienced during the first year of its development, and the hopeful plan and intention for the project as it develops in the future.

Drennan, Megan

[119] *Pharaonic Power and Architectural Labor Investment at the Karnak Temple Complex, Egypt*

Labor investment studies, based on the notion that the energy of people is quantifiable, give an invaluable and unique insight into the architectural pursuits of past societies. This labor study of ancient Egypt provides a better understanding of authority among Egyptian pharaohs as represented by their legacy of monumental architecture. A site of profound importance to Egyptian society was the Karnak Temple Complex, specifically the precinct of Amun, which was aggrandized by pharaonic architectural attention over a span of 2,000 years. The primary objective of this research is to compare the leadership and expense invested in the building of Karnak over time, as it reveals the significance of these projects and therefore the power of each pharaoh. Investment was calculated using the volume of material used for each structure that composes the complex and was compared to pharaonic variables. I will present how variables of time, warfare, and the centralization of the government were strongly correlated with monumental building at Karnak. I argue that the results demonstrate that rulers with greater sociopolitical power expressed it through their successful building programs at Karnak. Likewise, it served as a justification for their authority, role, and military actions.

Drennan, Robert [171] see Peterson, Christian

Druc, Isabelle (University of Wisconsin-Madison) and Gabriel O. Prieto (Universidad Nacional de Trujillo Peru)**[31]** *Social Interactions at Gramalote: A Ceramic Production Perspective*

Recent petrographic analysis of ceramics and comparative samples from the Formative site of Gramalote, on the north coast of Peru, allows us to brush a tentative portrait of ceramic production at or for Gramalote. Considering ceramics as part of a socio-economic network, the identification of different paste groups yields information relative to some of the interactions occurring at that time period in the Gramalote region.

[102] *Discussant***Duarte, Carlos (University of Cantabria), Eneko Iriarte (University of Burgos), Igor Gutiérrez-Zugasti (University of Cantabria) and Pablo Arias (University of Cantabria)****[49]** *Carbonate Microfacies in Shell Middens of Northern Iberia: Implications for Holocene Environment and Mesolithic Settlement*

In the Cantabrian region (northern Spain), the exploitation of marine resources is well known. This is especially true during the Mesolithic, as attested by the particular record of carbonate-cemented shell middens in caves and rockshelters, although only a few sites have shell middens in stratigraphic position, allowing archaeological excavation.

Recent investigations at three sites, El Alloru, El Mazo, and La Fragua, demonstrated that these deposits record a complex accumulation of calcium carbonate forms, with juxtaposed microfacies resulting from both human inputs of Ca (e.g., combustion features and the shells themselves) and the posterior carbonate cementation by karstic hydrological activity. In addition, postdepositional processes led to the precipitation of secondary carbonate crystals throughout the deposits. Differentiation between each form of calcium carbonate is possible through petrographic (thin sectioning), mineralogical (FTIR), and geochemical (SEM) analysis. This approach permits the identification of carbonate forms such as tufa, stromatolitic structures, calcitic ash, and secondary recrystallizations, achieving great detail in their spatial and chronological interactions.

It is concluded that microcontextual multitechnique approaches to the carbonate microfacies of the shell midden are highly informative regarding a higher-resolution record of local Holocene conditions, the integrity of the human activities, and therefore, the functionality of these deposits.

DuBois, Erin, Tony Waldron (University College London), Kate Bowers (University College London) and Carolyn Rando (University College London)**[187]** *An Examination of the Spatial Distribution of the Tissue Fragments Created during an Explosive Event*

In the field of forensic science, the investigation that follows an explosive attack is one of extreme importance. There are, however, few universally accepted methods for the location and recovery of human remains after an explosion, especial in the cases of an IED or suicide bomb attack. This explains the paucity of available research and guidance on the subject. The research presented here aims to improve practice both in terms of recovery of the victims and in determining the characteristics of the explosive device in a way that would enhance counter-terrorism intelligence. The question that has been posed is whether there are recognizable patterns in the location of forensic evidence following an explosive event associated with contextual conditions? If so, can those patterns then be used to identify these conditions after the explosion has taken place? To explore these requirements, pilot studies were undertaken using data from controlled explosions using pig carcasses undertaken in the U.K.. These studies charted the spatial distribution of tissue debris following an explosion through the use of Archaeological GIS techniques.

DuChemin, Geoffrey**[50]** *Zooarchaeology of the Vertebrate Fauna of Tibes: Uniformity in Transition*

This paper presents the results of a recent zooarchaeological analysis of vertebrate remains from the Tibes Ceremonial Center near Ponce, Puerto Rico. Two excavation units contained intact and undisturbed deposits with the potential to provide information pertaining to social dynamics and socio-cultural change at the site. Radiocarbon dates from the two units indicate that each archaeological deposit occurred during times of perceived dynamic social and cultural activities on the island. During these transitional periods, there were discernible changes in material culture—especially ceramic styles. The vertebrate fauna contained in these assemblages pertain to the consumption and distribution of animal foods, as well as other ways in which animals were used at the site. This includes the possible use of animals in ceremony. The results of this study, combined with previous zooarchaeological studies at Tibes, demonstrate that changes in material culture through time do not always correlate to changes in human behavior regarding food and animal use.

DuChemin, Geoff [222] see Kamenov, George

Dudgeon, John [13] see Darling, J. Andrew

Dudley, Meghan J. [200] see Ankele, William

Duff, Andrew [194] see Safi, Kristin

Duff, Andrew (Washington State University), Ashenafi Zena (Washington State University/Hawassa University), Addisalem Melesse (Hawassa University) and John Wolff (Washington State University)

[269] *Recent Research on Megalithic Stele sites of the Gedeo Zone, Southern Ethiopia*

This presentation discusses a new research effort to identify, document, date, and better understand the numerous megalithic stele sites of the Gedeo Zone in the Southern Nations, Nationalities, and Peoples' Regional State (SNNPRS) of southern Ethiopia. The Gedeo Zone is home to numerous stele, features that occur as isolates, in small groups, and as localities with numerous stele. Stele range from 1 meter to over 5 meters in length, and though some remain standing, most have collapsed. Stele are sometimes undecorated shaped stone, but most are carved and have been classified as phallic and/or anthropomorphic. Previous research includes Joussaume's excavations at Tuto Fela, a cemetery, and several documentation efforts. In 2015, we initiated testing at Chelba Tutiti, which includes the largest concentration of stele documented in the region. We discuss the results of test excavations at the base of stele at Chelba Tutiti, the site's chronological placement, and our efforts to source the stone used to make stele. We contextualize our findings in light of what we know of stele sites in the region, efforts to document and protect these sites, and we outline plans for continued work in the coming years.

[269] *Chair*

Duffy, Paul (University of Toronto)

[149] *Studying the Past with Fragments from the Fire: Student Research on an NSF-REU Field School*

Significant population increases, the intensification of craft production, and new forms of agricultural output characterize a major transition between the eighteenth and seventeenth century B.C. on the Great Hungarian Plain. Many archaeologists consider these changes hallmarks of an emerging social class. Yet research from different parts of eastern Europe suggests that societies were organized in a variety of ways during this regional florescence. This session describes recent investigations into a Bronze Age community buried at the cemetery of Békés 103 in eastern Hungary, including an international team of undergraduate students funded by the National Science Foundation and the Central European Institute at Quinnipiac University. During the 2015 summer field season, a team of 15 students conducted independent research projects on a range of datasets from the cemetery and surrounding area, focused on understanding patterns in trade, identity, and cremation burial practice. In this session, the students present their findings related to the site, the funerary customs, and how the cemetery population fit into the trade, population movement, and new identities emerging in Bronze Age Europe during the mid-second millennium.

[149] *Chair*

Duffy, Paul [149] see Parditka, Györgyi

Duffy, Lisa (University of Florida) and Ann Laffey (University of Florida)

[235] *Distribution of Organic Residues in a Pottery Vessel from Cerro Maya, Belize*

A reconstructed pottery cooking vessel dating to the Late Preclassic Period from the ancient Maya site of Cerro Maya, Belize, was sampled for absorbed organic residues. Samples were taken from multiple locations to look for differences in their distribution. Three interior regions—rim, mid-body, and base—were sampled along with one from an exterior basal location as a control to evaluate for possible contaminants. Samples were processed using a high pressure liquid extraction technique for evaluation with gas chromatography-mass spectrometry (GC-MS), and liquid chromatography-mass spectrometry (LC-MS). The differential distribution of residues, such as lipids and alkaloids, has implications for sampling strategies of food-preparation vessels and also reflects specific vessel uses. A region of fire-blackening on the lower exterior surface of this Poknoby Striped round bottomed jar suggests its use as a cooking pot. The residues recovered aid in the interpretation of the possible functional and social roles of this food preparation vessel, as well as the overall utility of using museum curated pottery artifacts for residue analysis.

Dufton, Andrew (Brown University)

[33] *Discussant*

Duggan, Ana T. [85] see Harris, Alison

Duin, Renzo

[23] *The Pot Calling the Kettle Black: Archaeological Assemblages and Ethnographic Communities in Guiana and the Lower Amazon*

Ceramic analysis is essential to understand identity and regional interaction in precolumbian (before A.D. 1492) Amazonia. Underpinning existing ceramic analysis are time-space graphs developed and established in the second half of the twentieth century by Irving Rouse and José Cruxent (Orinoco and Caribbean) and by Betty Meggers and Clifford Evans (Amazon and Guiana). These time-space graphs are grounded in the concept of a culture-historical mosaic, aimed at fixing peoples in time and space by a set of reference points measured in terms of socio-culturally meaningful events such as migrations, contact, and conquest. Nevertheless, the development of archaeological and deep-historical research in the twenty-first century has demonstrated that both Amazonia and the Caribbean are more heterogeneous and dynamic than anticipated from the constraining definition of the twentieth century tropical forest culture model. Reconceptualization of social and historical processes is required since recent socio-cultural anthropological studies have demonstrated that social phenomena occur in complex dialectical relationships of negotiating discontinuities and contested practices. To understand the kaleidoscope in pottery styles (some pan-Amazonian others local, some long-term others short-lived, with in-between all types of variants, hybrids, co-existence of styles, and sloping horizons) a dynamic multi-scalar relational alternative to the static space-time graph is anticipated.

Dulanto, Jalh (Pontificia Universidad Católica del Perú)

[56] *Political and Economic Dynamics of Maritime Communities of the South Coast of Peru During the First Millenium BC: The Excavations of the Paracas Archaeological Project at Disco Verde and Puerto Nuevo*

Extensively excavated by Frederic Engel in the 1950s and 1960s, Disco Verde and Puerto Nuevo are very well known in the archaeological literature of the south coast of Peru for their occupations dating back to the first millennium B.C. Recent excavations by the Paracas Archaeological Project in these two sites have resulted in the recovery of crucial information to improve our understanding of the role maritime communities played in the expansion and intensification of long-distance exchange networks during this critical period in the history of complex societies in the central Andes. In this paper, I focus on the compelling evidence we have found of long distance exchange networks of prestige pottery vessels along the Peruvian Coast.

Dumas, Ashley (University of West Alabama)

[225] *Interpreting Prehistoric Eastern U.S. Salt Production Using Ethnographic Analogy*

The manufacture of salt by agricultural peoples in the eastern United States has been documented at dozens of salt springs. Archaeologists have produced detailed inventories of specialized features, vessels, and other tools common to these sites and have mapped variations in their distributions, but the precise processes in which these tools were applied, particularly in the Early and Middle Mississippian periods, remains largely speculative. This paper situates the evidence within the limited possible iterations of the evaporative process and in recent ethnographies of salt-making to construct a set of plausible, testable explanations for the process in the prehistoric eastern U.S.

Dunbar, James (Aucilla Research Institute, Inc.)

[159] *The South-Eastern Warm Thermal Enclave and Perturbations of the Late Pleistocene*

For decades, late Pleistocene climate events prior to the Younger Dryas (Heinrich 0 ~12.9 ka cal. B.P.) were ignored by archaeologists because the Clovis First paradigm implicitly supposed nothing was earlier. Since 2005, attitudes have changed and the importance of understanding the effects of major climate shifts is now important to archaeology. This presentation will focus on the timing of late Pleistocene climate events and the subsequent expressions of habitat change in the coastal southeast. Landscapes since Marine Isotope Stage 3 will be considered, as will the cultural expressions that, potentially at least, once occupied the south-eastern Warm Thermal Enclave.

Duncan, Neil (University of Central Florida), Peter Siegel (Montclair State University), John Jones (Archaeological Consulting Services), Nicholas Dunning (University of Cincinnati) and Deborah Pearsall (University of Missouri)

[222] *Caribbean Landscapes during the Late-Precolonial and Early-Colonial Periods*

People in the Caribbean have been interacting with their landscapes for at least 8,000 years (Trinidad), sometimes in ways that leave only subtle traces of actions and in others the evidence is dramatic. Over this span we see variable trajectories of landscape engagements, ranging from early relatively intense activities followed by abandonment to continuous occupations throughout prehistory to places occupied late in the historical sequence. First colonizers to the Caribbean modified and eventually managed landscapes to create places recognizable to them as home. Later groups of people built on and further modified these constructed places so that by today, the landscapes contain a cumulative record of anthropogenic history. In this paper, we address paleoecological evidence for the late precolonial and early European colonial occupations on and impacts to selected landscapes in the eastern Caribbean.

Dungan, Katherine (University of Arizona, Archaeology Southwest) and Leslie Aragon (University of Arizona)

[17] *Two Houses, Both Alike in Dignity: Visibility, Material Culture, and Contrasting Histories at Two Chaco Halo Communities*

The communities that surround the neighboring great houses of Kin Bineola and Kin Klizhin contain broadly similar kinds of sites—including the great houses themselves, small habitation sites, and shrines—and are both located in the "Chaco Halo," the region immediately surrounding Chaco Canyon itself. Nevertheless, the two communities differ in their composition, spatial structure, and histories. Intervisibility between habitations and public or religious architecture provides one possible measure of the roles played by such specialized sites within the daily life of the community. In the Kin Bineola community, for example, the shrines are very highly visible from small habitation sites, while the great house itself is not. The comparison of visibility networks with material culture networks generated using the Chaco Social Networks Project data allows greater insight into the relationship between habitation sites and public or religious spaces, as well as providing a means to test the degree to which visibility between habitation sites was related to shared social connections. This project offers a "meso-scale" approach in focusing on comparison within and between two communities, but the material culture considered within the network analysis equally helps to place the communities within the context of the larger Chacoan World.

Dunn, Shannon

[243] *Pragmatism in Practice: Advocacy, Ethics, and Impediments in Compliance*

The practice of "compliance archaeology" within existing structures requires practitioners to constantly weigh ideals against practicalities. What we think should be done, and how, is often limited by shortfalls in budgets, labor, time, and access. It is evident that few cultural resource stewards or managers have the resources they need to sufficiently address the requirements of Section 106 of the National Historic Preservation Act, much less compliance with any other legislation, guideline, or agreement. Even where ethics, professional standards, and investigative protocols are clearly defined, data sufficient to moving through the "Section 106 process" is often not recovered or fully presented and distributed; ultimately, the archaeological community, local populations, the general public, descendants, and other affiliated groups—as well as relationships between and among these—suffer as a result. In this presentation, I will utilize case studies of both successes and failures during my time as a compliance archaeologist to highlight opportunities for advocacy within applied contexts; to illustrate how ethical arguments can supplement rational ones to work toward compromise when consensus is not attainable; and to outline the impediments archaeologists may continue to face in the implementation of compliance work in the foreseeable future.

[243] *Chair*

Dunning, Nicholas [26] see Beach, Timothy

Dunning, Nicholas (University of Cincinnati)

[162] *Ancient Water Collection and Storage in the Elevated Interior Region of the Maya Lowlands*

The Elevated Interior Region (EIR) of the Maya Lowlands posed especially difficult challenges for year-round ancient human occupation and urbanization. Accessible surface and groundwater sources are rare, and a 5-month dry season necessitated the annual collection and storage of rainwater in order to concentrate human population. Here, we review ancient Maya water storage adaptation in the EIR, including urban and hinterland reservoirs as well as residential scale tanks and cisterns. Large reservoirs were devised as early as the Middle Preclassic Period and continued to be an important adaptation for urban centers in the EIR throughout their occupation. Residential scale tanks and cisterns may also have early origins, though these have been less investigated. Considerable inter-regional variation existed in water management strategies.

[96] *Discussant*

Dupez, Elodie (Instituto de Investigaciones Históricas, UNAM) and Jamie Forde (University of Pennsylvania)

[15] *New Content for New Audiences: The Repainted Pages and Life History of the Codex Vaticanus B*

In this paper, we discuss the life history and prehispanic modification of the understudied Codex Vaticanus B, commonly attributed to the Borgia group codices. Seven of the manuscript's 96 pages were covered over with a new white background, composed of different materials than the original, and repainted with several chromatic palettes, likely by different artists. While the manuscript's structure largely follows that of other Borgia group divinatory almanacs attributed to Nahuatl peoples from Central Mexico, it is primarily in these repainted pages where the codex deviates from that structure. Through comparative analysis with the corpus of precolumbian codices of Mesoamerica, we argue that the repainted scenes exhibit affinity with manuscripts from the more distant regions of southern Puebla and Oaxaca, which were populated by different ethno-linguistic communities. Thus, while the manuscript certainly changed hands over time, it may have circulated more broadly among different cultural groups in doing so. In sum, we suggest that these repainted scenes may reflect appropriations of the ritual knowledge found within the codex and of the power inherent to its material instantiation, while at the same time the manuscript was altered to bring it more in line with particular socio-cultural sensibilities.

[172] *Discussant*

Dupras, Tosha [24] see Groff, Amanda

Dupras, Tosha (Department of Anthropology), Gytis Piliciauskas (Lithuanian Institute of History), Rimantas Jankauskas (Vilnius University) and Giedrė Piliciauskiene (Lithuanian Institute of History)

[134] *Understanding the Neolithic Transition: Stable Carbon and Nitrogen Isotope Analysis of Subneolithic and Neolithic Animals and Inhabitants of the S.E. Baltic Coast (3200–2500 cal. B.C.)*

The Neolithic transition in the boreal zone of the Baltic region deviated significantly from the "classic" European model, and in 2014–2015, a multidisciplinary research project targeting why this occurred was undertaken. Twenty-one ¹⁴C AMS dates were obtained for 11 Late Mesolithic–Early Bronze Age (7000–1000 cal. B.C.) graves and for six human bones found in settlements or refuse layers. Stable carbon and nitrogen isotopes analyses of bone collagen were conducted for 40 human bones and teeth from Subneolithic Šventoji coastal sites and the inland Neolithic Benaičiai site. Forty-two contemporaneous animals were also analyzed, and previous published data from 18 Lithuanian Stone and Bronze Age graves and 42 animals are also included. Stable isotope values confirm fresh/brackish water fish as the main source of protein for coastal Subneolithic people, while marine resources were of much less importance (δ¹³C from –21 to –18.8‰; δ¹⁵N from 14.4 to 15.6‰). Intra-individual stable isotope variation indicates limited changes in diet throughout life. A clear shift towards terrestrial foods is demonstrated for individuals from the Neolithic Benaičiai site. This dietary shift is roughly contemporaneous with the drainage of lagoonal lakes at Šventoji, as well as with a spread of Corded Ware Culture in 2700–2500 cal. B.C.

Durán, Víctor [139] see Franco, Nora

Durusu Tanriöver, Müge [79] see Johnson, Peri

Dussol, Lydie [96] see Purdue, Louise

Dussol, Lydie (University of Paris 1 Panthéon-Sorbonne)**[96]** *Charcoal Analysis to Reconstruct the Ancient Wood Economy of Naachtun*

Researchers have long considered that the relations between ancient Maya societies and their tropical forested landscape significantly affected social and environmental development throughout the Maya Lowlands. The lingering debate contrasting the hypothesis of a massive deforestation during the Classic Period with a model of careful environmental management has not been resolved, and places forest resources exploitation at the center of the rise and development of ancient Maya cities. In particular, wood is an essential resource, abundant in such environments but still exhaustible, and can therefore constitute a key economic and ecological indicator in the study of ancient societies.

The systematic and diachronic anthracological study of Naachtun aims to understand the global wood economy of the site as well as the impact of human activities on the evolution of local forested areas through time. Charcoal assemblages are interpreted in terms of firewood collection strategies, sources of supply, and silviculture practices. Furthermore, issues related to the representativeness of the charcoal records are discussed. This theoretical framework allows greater understanding of the co-evolution between Naachtun's society and its environment.

[96] *Chair*

Dussubieux, Laure [13] see Brooks, Alison

Dustin, Headley [204] see Alfonso-Durruty, Marta

Duwe, Samuel (University of Oklahoma)**[66]** *The Emergence of Tewa Pueblo Society*

This poster explores the emergence of Tewa Pueblo society in northern New Mexico and uses archaeological methods to understand the ways in which disparate communities (of migrants and autochthonous people) coalesced to create a novel social, ceremonial, and residential organization—the hallmarks of Tewa village life—in the mid-fourteenth century. While recent research demonstrates where and when these changes occurred, archaeologists know little about why and how the ancestral Tewa collaborated, contested, and negotiated their new society. To address these questions, I focus on the Wiyo phase (A.D. 1300–1350), a dynamic but poorly understood time period immediately preceding the coalescence of ancestral Tewa communities and the creation of village life. I attempt to determine the history of these small communities (their origins, identities, demographics, and settlement patterns) through synthesizing architectural, landscape, and pottery data to better understand how the historical contingencies of settlement and interaction led to the development of a homogenized, but unique, Tewa identity. Examining the Tewa's early history provides an excellent case study for understanding how (and why) people converge to create new worlds and new social systems, not just in the American southwest, but in small-scale societies worldwide.

Dye, David [6] see Lima Hooven, Alex

Dysart, John [284] see Lobiondo, Matthew

Dyson, Alexis [120] see Chenvert, ErinMarie

Dziechciarz, Pawel (University of Warsaw) and Dylan Kelly (University of New Hampshire)

[149] *Geophysical Investigations at the Bronze Age Site of Békés 103 in Eastern Hungary*

In archaeological research, both non-invasive and weakly invasive methods are often employed without, or prior to, excavation. Surface collection, geophysical survey, and shovel testing are the methods that have been employed at the site of Békés 103. Despite the difficulty imposed by the soil conditions and the nature of the targets themselves (cremation graves), geophysical measurements employing a variety of techniques (gradiometry, soil resistivity, and electromagnetics) were applied in tandem with surface collection methods to detect potential targets for guiding subsequent excavations. This report merges geophysical data collected in 2015 with the data from the 2011 and 2013 field seasons, comparing the geophysical survey anomalies with the corresponding excavation data. We build a signature archive for cemetery features based on these methods, and through correspondences we isolate potential targets for future excavation. Finally, we tentatively conclude which geophysical prospection methods are optimum for the detection of human burials in this region.

Dziedzic, Erica [71] see Daggett, Adrienne

Eager, Heidi [223] see Prendergast, Mary

Earley, Frank Lee [123] see Huffman, Thomas

Earley-Spadoni, Tiffany (The Johns Hopkins University)

[174] *Light the Beacons! GIS Analysis of Fortress Inter-Visibility in Iron Age Armenia*

GIS analysis can helpfully intervene in highly-theorized debates about archaeological landscapes by allowing archaeologists to empirically evaluate assertions about (inter)visibility. In recent decades, visibility studies have clarified the sociocultural significance of structures such as tombs, settlements, signalling installations, and other landscape markers. However, it is often difficult to evaluate inter-visibility and challenging to distinguish intentionally-constructed inter-visibility from spurious patterns that are the result of chance. This paper evaluates the regional distribution of Early Iron and Urartian fortresses in the environs of Lake Sevan, Armenia, utilizing survey data collected by an Italian-Armenian expedition. The investigation employs Social Network Analysis (SNA) metrics and random simulation to test scenarios regarding chance-versus-intentional placement, concluding that the placement of fortresses was the result of careful planning that ensured inter-visibility. This approach situates GIS analysis within a theory framework that includes landscape archaeology and highlights the potential of geospatial techniques to illuminate human agency in the past.

Earnshaw, Jacob

[148] *Cultural Forests of the southern Nu-u-chah-nulth: Indigenous Bark Tending on Vancouver Island*

Culturally Modified Trees are British Columbia, Canada's most common archaeological site type. Data related to these indigenous forest management sites have been collected for a few decades now through CRM work in the area, though little research has incorporated this archive. My M.A. thesis focuses on creating regional chronologies of bark stripping and logging dates for the southwest coast of Vancouver Island, to better understand forest usage and population dynamics around the contact period. In addition to data collected from consultant reports, many dates have been collected from recent old growth clear cuts in the field. This work has shown that roughly half of all dates collected from field contexts can be found within ancient cedar trees that have healed over and hidden their cultural scars, effectively making the oldest age class of CMT's invisible to archaeological consultants and thus unrecorded/protected prior to industrial logging. The dates collected in field contexts are found to be more representative of the full range of cultural modifications on cedars over the tree's full lifetime. The oldest recorded living CMT has also been found on this project, dating to 1,108 years.

Ebert, Claire [237] see Fox, Steve

Ebert, Claire (Pennsylvania State University), Nancy Peniche May (University of California-San Diego), Jaime Awe (Northern Arizona University), Brendan Culleton (The Pennsylvania State University) and Douglas Kennett (The Pennsylvania State University)

[288] *Timing the Development of Household Complexity at Cahal Pech, Belize*

Understanding the settlement and growth of ancient communities into spatially, demographically, and socio-politically complex polities is one of several critical research issues in Maya archaeology. The major polity of Cahal Pech, located in the Belize River Valley, provides a unique case study for understanding the development of complexity because of its long occupational history, from the Early Preclassic (~1200–1000 cal B.C.) until the Terminal Classic Period Maya "collapse" (~cal A.D. 800–900). In this paper, we present the results of high-resolution AMS 14C dating of organic and human remains from several hinterland residential groups associated with the Cahal Pech polity. Our chronology provides a framework for measuring differences in architecture and artifacts between domestic contexts over time, allowing us to identify trends related to changing social status and wealth. We compare our results to similar social and political developments taking place within the Cahal Pech elite monumental core, and at polities elsewhere in the Belize Valley.

Echenique, Ester and Florencia Avila (Instituto Nacional de Antropología y Pensamiento L)

[255] *From Ethnography to Archaeometry: Ceramic Production and Styles in the Rio Grande de San Juan Basin, Bolivia*

The Yavi-Chicha phenomenon in the circumpuneño Andes has been extensively discussed; however, little systematic research has focused on systems of ceramic production. Consequently, multiple questions remain unanswered regarding the organizational systems of Chicha communities during the Late Intermediate Period (ca. A.D. 1000–1450). Today, the core region of the Chichas is an exceptional area of ceramic production. Nearly 70 percent of the inhabitants of the town of Chipihuayco are actively producing pottery during the dry season. An ethnographic perspective coupled with archaeometric

analyses of the operational chain of ceramic production of three women potters provide a unique entry point to explore how production practices are intertwined with technological styles at the household level. This work explores the ethnographic record of the entire operational chain of ceramic production, combined with a detailed characterization of raw materials, in order to determine paste recipes and manufacturing processes. The results will provide new insights into the organization of ceramic production, especially regarding how technological choices and styles are dependent on multiple factors. Additionally, a better understanding of the operational chain of contemporary potters will provide the fundamental basis to develop research questions and hypotheses about past production processes.

Echeñique, Ester [57] see Vidal Montero, Estefania

Eckersley, Jaclyn [39] see Lambert, Stephanie

Edgar, Heather (Maxwell Museum of Anthrop) and Christopher Toya (Pueblo of Jemez)

[266] *Context and Collaboration: The Maxwell's Repatriation to Jemez Pueblo*

The Pueblo of Jemez and the Maxwell Museum of Anthropology have been working together since 2007 to document human skeletal remains in preparation for repatriation. Challenges presented in preparing for repatriation included a paucity of field notes and other records, as much of the material came to the Museum from 1930s field schools, and a loss of information about which burial objects were originally with which burials. Despite these challenges, over 700 individual skeletons have been repatriated over the past five years. Coupled with a grant from National NAGPRA, the collaborative relationship developed over this period has allowed for an accurate estimate of the minimum number of individuals represented and a deeper understanding of the demography and health of Jemez' ancestors. Despite reburial, the potential for future learning continues as the Museum curates samples for potential ancient DNA studies. These samples are curated at the Pueblo's request and are owned by Jemez.

This poster will describe the working relationship between the two institutions, present a timeline of the repatriation process, and detail the information provided by the documentation of the human skeletal remains.

Edinborough, Kevan [132] see Martindale, Andrew

Edinborough, Kevan [218] see Griffiths, Seren

Edwards, Wendy [6] see Austin, Robert

Edwards, Briece (Confederated Tribes of Grand Ronde)

[29] *New Directions of THPOs: The Perspective from One Tribe*

Tribe's perspective and understanding of practice, place, and context is as unique and diverse as Tribes themselves. The roles of Tribal Historic Preservation Offices (THPOs) are equally diverse between Tribes but all have one consistent thread—they, like states, are charged with the identification, recordation, and protection of cultural resources. Tribes are integral to the 'Section 106' process and are often required to reacquire individuals with the state and federal laws and procedures that govern the protection of these limited resources. Beyond these legally defined roles, THPOs are actively engaged with other cultural heritage concerns such as research design, management practices, and policy development. Since cultural resources often include materials, actions, and places associated with ongoing and active practices, it is important to develop tools and mechanisms to insure their continued use. This may mean finding ways to maintain place anonymity, or evaluate potential impacts resulting from climatic change and shifting weather patterns. It also involves providing understanding and Tribal perspectives to future generations of professionals.

[203] *Discussant*

Edwards, Erin and Anastasia Poulos

[153] *Dental Health of the Delmarva Adena-Hopewell Native American of Pig Point Site in Lothian, MD*

I examined the dental health of Delmarva Adena-Hopewell Native Americans from a mortuary ossuary pit at the Pig Point Site in Lothian, Maryland, dating to the Middle Woodland Period (300 B.C.–A.D. 900). The Pig Point Site is a site of impressive ritual mortuary features, five distinct secondary burial ossuary pits, indicating that this was an area of significance to local prehistoric populations. Douglas Owsley carefully examined the dental remains of the first burial ossuary pit and I compared Owsley's analyses of the Pit One dental remains with the dental remains of the fourth burial pit. I established the minimum number of individuals (MNI) represented in Pit Four and assessed the dental health of the population through the occurrence of dental diseases, such as dental caries and enamel defect hypoplasia. In most prehistoric forager societies, the frequency of dental caries is low, while the frequency of linear enamel hypoplasia is high. My results concluded that the populations buried at Pig Point Site were in overall good health, with slight variation between Pit One and Pit Four. I hope my research will contribute to an understanding of the subsistence practices and daily life of local Delmarva peoples.

Edwards, Luke [94] see Hitchcock, Robert

Eerkens, Jelmer [13] see Van Gijsegem, Hendrik

Egan, Rachel (University of Colorado at Boulder)

[32] *The Volcano That Went Boom: Payson Sheets' Contributions to Understanding the Tierra Joven Blanca Eruption of the Ilopango Caldera, El Salvador*

Payson Sheets' seminal work on the Tierra Joven Blanca (TBJ) eruption of the Ilopango Caldera, El Salvador, was one of the first projects to address the impact of large-scale disasters in Mesoamerica. The on-going research on this eruption has been important for understanding the event as well as developing method and theory for reconstructing the cultural impact(s) of sudden massive stresses. While originally dated to A.D. 290±110, the TBJ

eruption has been re-dated to the mid fifth–sixth century and its scale increased to a VEI 6+. As a result, Sheets and colleagues propose that the eruption was not simply a local phenomenon but may be casually linked to the world-wide A.D. 536 climatological event. This paper explores the role Dr. Sheets has played in understanding the differential development of resilience and vulnerability both within and between societies specifically related to the TBJ eruption of the Ilopango Caldera.

Egerton, Victoria [183] see Harvey, Virginia

Eichner, Katrina (UC Berkeley)

[251] *Memories of Women's Work: Investigating the 19th Century U.S. Army Laundresses' Quarters at Fort Davis, Texas*

The nineteenth century U.S. army encampment at Fort Davis is commonly remembered for its association with the enlisted men and officers who served the U.S. government. However, the fort also employed and rationed a group of hispanic and black female laundresses, who too often are made invisible in modern interpretations of the site. Using an assemblage of domestic materials collected during the summers of 2013 and 2015, this paper aims to highlight the work—including physical labor, cultural brokering, and domestic family maintenance—that these women contributed to the fort community. Moreover, by focusing on how these women have (not) been represented in the archival and historic record, this paper will ask how, why, and for whom does archaeological investigation help restore memories of the past.

[251] *Chair*

Eigenherr, Gustav (Documento Group) and Lais Müller (Documento Group)

[255] *Cultural Inclusion and the Use of Technology*

The presentation intends to show the work and results achieved with local communities from Brazil. Those communities are culturally related to archaeological work near inhabited areas or in indigenous lands. The presentation intends to show how those communities are included in the archaeological project and what tools are used in order to reach positive outcomes. This paper highlights the technological tools used in order to be more efficient in teaching the communities and making the archaeological research more engaging and tangible to the public audience. Such tools being responsive software, games, virtual and augmented reality, and laser scans. This presentation also wants to show that the success of the archaeological research can be positively affected by the community participation.

Eiselt, B. Sunday [13] see Darling, J Andrew

Eiselt, B. Sunday (Southern Methodist University) and Patrick Livingood (University of Oklahoma)

[69] *Gear Selectivity and Mass Harvested Minnows: Evidence from the Northern Great Basin*

Madsen and Schmitt's seminal 1998 article challenged the assumption that small animals and fish in archaeological assemblages of the Great Basin provides evidence for diminished foraging efficiency. Energetic return rates for density dependent species instead may be a function of harvesting technique. The Northern Paiute of the Great Basin exploited seasonally aggregated tui chub minnows (*Gila bicolor*) using gill nets, seines, and scoops. This study presents a simulated mass harvesting experiment and gear selectivity curves for comparison to prehistoric archaeological fish assemblages. Technological choices are relevant to foraging returns and can be reconstructed to provide insights on the energetics of past fishing and the ritual dimensions of equipment.

Ek, Jerald (Western Washington University)

[256] *Archaeological and Epigraphic Indices of the Political Domination: A View from the Northwestern Periphery of the Kaanu'l Hegemonic State*

The past decade has witnessed a revolution in our understanding of Classic Maya geopolitics, particularly in reconstructing asymmetrical interpolity relationships dominated by expansionist states. Employing variable political strategies, including both direct and indirect rulership, the Kaanu'l Dynasty dominated a large network of kingdoms across the Maya Lowlands. This paper examines the impacts of the expansion and dissolution of the Kaanu'l state in western Campeche, within the northwestern frontier of its vast political network. Implementing a strategy of indirect political control, the powerful Kaanu'l rulers of Calakmul incorporated this region through patronage of the large capital of Edzná as a proxy, facilitating control over the strategic route to the northwest via the Edzná canal system and the Río Champotón waterway. The decline of Calakmul as a major geopolitical power in the mid-eighth century A.D. in turn ushered in a period of political chaos, with emergent groups with strong links to the western Gulf Coast rising to prominence within the ensuing power vacuum. Drawing on both archaeological and epigraphic data, this paper examines the impacts of incorporation into the Kaanu'l state, as well as the major changes that took place within the region following the decline of the Snake Dynasty.

[109] *Discussant*

Eklund, Elizabeth (University of Arizona - School of Anthropology) and Lisa Palacios (University of Arizona - School of Anthropology)

[226] *"Collaborative" Archaeology: A Proposed Rubric-Based Assessment of Archaeological Projects with American Indian Communities*

In *Transforming Archaeology*, Atalay et al. (2013) have identified benefits of collaborative projects for both the discipline and participating communities. A well-designed collaborative project has the potential to both foster the application of standard archaeological research methods to questions of interest to various tribes and apply Indigenous research methods to standard archaeology inquiries. We propose a standardized evaluation scorecard (rubric), to examine outcomes to American Indian communities participating in archaeological projects. Developing a rubric to assess archaeological projects reveals some benefits to American Indian communities participating in archaeological projects, including control of data, how information is understood or interpreted, and building of community capacity to engage in archaeology in the future. Revealing these benefits will demonstrate if the project contributes to strengthening tribal sovereignty and allows members a wider opportunity to engage in archaeology. This project studies collaborative methodologies assessing if the promised outcomes are fulfilled. We apply the rubric we developed to the University of Arizona's Bureau of Applied Research in Anthropology (BARA) research with Blackfeet archaeology, and the School of Anthropology and Arizona State Museum's archaeological project at Mission Guevavi. Our rubric allows us to visualize benefits and identify issues that have yet to be addressed.

[226] *Chair*

el-Behaedi, Raghda [277] see Reber, Eleanora

Elera, Carlos [207] see Hurtubise, Jenna

El-Hajraoui, Mohamed [177] see Steele, Teresa

Ellenberger, Katharine (Binghamton University)

[71] *Satisfying and Reflecting on the Urge to Evaluate in Public Archaeology*

The only way to know if archaeological outreach and community engagement is working is to ask. We need to ask the right questions, to the right people, and incorporate that feedback into our work. Yet evaluation is a fraught pursuit. When directing our projects directly at, and working with, the public, our projects are ever more embedded in the politics of cultural heritage and reverberate throughout the communities where we work. Archaeologists and heritage workers have been struggling with this balance for the past several decades; this session is aimed at bringing a diverse group of these professionals together to discuss what is and should be done. In this paper, I will present concepts of ethically engaged evaluation from archaeological, heritage, museum, and science communication literature. The objective of this paper is to contextualize the topic of the session within the ethics and theory of archaeology broadly, setting the tone for the case studies and methodological suggestions of the rest of the authors.

[71] *Chair*

Elliott, Gail [25] see Halcrow, Sian

Elliott, Daniel

[213] *Get the Lead Out: Towards Identifying Lead on Eighteenth- and Early Nineteenth Century Battlefields and Settlements*

Small arms ammunition in America, throughout the eighteenth and early nineteenth centuries, consisted of round soft-metal balls. These were mostly lead, although archaeologists have documented other metals such as pewter and silver as additives. Available small arms and related ammunition varied by military unit, and included pistols, rifles, trade guns, carbines, fowlers, and large caliber wall guns, as well as American, French, and English muskets. Macroscopic identification of associated bullets alone limits battlefield interpretations. I suggest a formalized regimen of lead ball analyses that combines elemental characterization (portable X-Ray Fluorescence, or pXRF) along with traditional descriptions and quantitative measurements. Traditional analysis documents diameter, weight, firing condition (impact evidence, rifling, worming, ramrod impact, casting evidence), alterations (chewing, cutting, carving), other post-depositional damage (rodent gnawing), and archaeological context. The pXRF information shows promise in identifying ore sources, contaminants introduced, firing condition, age, and military association. If combined with pXRF data from lead ore sources, baseline information can be developed for comparison among battlefields and incorporated into a global dataset with the purpose of better understanding the geographic distribution of military supplies and military strategy at macro global and regional levels, as well as at micro battlefield levels. Get your lead out!

Ellis, Chelsea

[123] *Subadult Mortality at McLemore: An Unexpected Culprit*

This study focuses on the subadult skeletal remains excavated in 1960 from the Late Prehistoric-age McLemore site (34WA5) in southwest Oklahoma. Past analyses of this skeletal collection primarily focused on the adults, and what they could contribute to the overall understanding of the health and lifestyle of the individuals who inhabited McLemore. The goal of this study was to reexamine the skeletal collection in light of new methodologies in diagnosing pathology, focusing on the subadult remains, as little to no information was obtained regarding this age class in past analyses, aside from basic demography. The application of regression equations to determine the developmental age of newborns identified near-term, term, and infant age classes, indicating a varied group of subadults present in the cemetery. The results of this project provide a better understanding of the McLemore site, as well as new information concerning the presence of scurvy and its possible affect on infant mortality on the southern Plains. In addition, this project clearly exposes the necessity of studying every age class of an archaeological population with diligence, as the subadult population truly contributed a wealth of knowledge to the overall understanding of the health and lifestyle of this population.

Ellison, Leigh Anne [9] see Brin, Adam

Ellison, Leigh Anne (The Center for Digital Antiquity) and Adam Brin (The Center for Digital Antiquity)

[261] *tDAR (the Digital Archaeological Record): A Domain Repository for Archaeology*

The Digital Archaeological Record (tDAR) is a domain repository for archaeological information maintained by The Center for Digital Antiquity (DA) at Arizona State University. Our mission is the long-term preservation of documents, data sets, images, geospatial information, 3D scans, and other digital files, to provide access for current and future uses. tDAR provides a secure location for sharing information on the web, enabling the user to protect site location and other sensitive information. tDAR adds value to resources in the repository because the information is more discoverable and accessible in an internet searchable digital format. Robust metadata associated with each piece of digital information in tDAR ensure that files can be effectively managed and easily discovered. In addition, digital files in tDAR are preserved in original formats, and will be forward migrated to new industry standards as they develop so that information remains accessible for future users. As digital tools used to collect and analyze information change quickly, it is critical that tools like tDAR are integrated into archaeological workflows so that archaeological information is available and accessible for widespread current and long-term uses.

Ellyson, Laura (Washington State University), Timothy Kohler (Washington State University) and R. Kyle Bocinsky (Washington State University)

[65] *Evaluation of the Village Ecodynamics Hunting and Domestication Models*

The Village Ecodynamics Project simulation ("Village") incorporates paleoenvironmental and archaeological data to understand the human and

environmental interactions that occurred during the Ancestral Pueblo occupation of portions of the Colorado Plateau of the U.S. southwest. Village predicts the available populations of deer, jackrabbits, and cottontails across the simulated landscape—as well as the sample of those fauna hunted by households—and how these vary with such parameters as household protein requirements and hunting radius. When turkey domestication is implemented, Village predicts protein yield from maize-fed turkey. Previous evaluations of these hunting and domestication models have explored system-level patterns of population density and settlement in the archaeological record. In this study, we evaluate the goodness-of-fit between animal-use predictions from the simulation and zooarchaeological data from sites located on the simulated landscape.

Elquist, Ora (Public Archaeology Laboratory, Inc.)

[42] *Susquetonscut Brook 5 Site: Residential Base Camp in an Upland Interior Setting?*

The Susquetonscut Brook 5 Site located in Lebanon, Connecticut, consists of Archaic to Woodland Period deposits within an upland interior setting. Such upland interior sites are typically associated with small campsites of a temporary nature. Data recovery excavations at the site in 2015 revealed numerous, large, and complex features, such as storage pits, postmolds, and roasting pits, that are more typically associated with larger, more residential campsites located within lower-lying floodplain or coastal settings. The data from the site potentially transforms what is currently known about settlement in upland settings in Connecticut.

Elston, Robert [94] see Gil, Adolfo

Emery, Kitty [134] see Thornton, Erin

Eng, Charlotte [121] see O'Neil, Megan

Engelbrecht, William (Buffalo State College) and Bruce Jamieson (McGill University)

[144] *Bone versus Stone Arrows and the Movement of the St. Lawrence Iroquoians*

In the fifteenth and early sixteenth centuries, St. Lawrence Iroquoian populations gradually decline and disappear from their homeland at the same period that the Wendat and Iroquois Confederacies are evolving. One of the most striking differences between St. Lawrence Iroquoian assemblages and those of surrounding groups is the general absence of stone arrow points on the former. This paper considers the advantages and disadvantages of bone or antler versus stone tipped arrows. We argue that long, thin stone Madison points were more effective in warfare than the bone and antler arrows of the St. Lawrence Iroquoians. However, the ultimate cause for the movement of the St. Lawrence Iroquoians was likely their failure to develop a confederacy.

Englehardt, Joshua (El Colegio de Michoacan)

[264] *New Perspectives on Gulf Coast Olmec Iconography and Scripts via the Mesoamerican Corpus of Formative Period Art and Writing*

The rich visual culture of the Formative Period Gulf Coast Olmec has long been recognized as playing a foundational role in the origins and development of subsequent Mesoamerican writing systems and artistic traditions. Nonetheless, Formative Period visual cultures remain relatively understudied, as does their role in and impact on the emergence of regional script systems, the developmental dynamics of which continue to elude adequate explanation. To advance the field's understanding of script development, since 2010, the authors have been constructing a comprehensive database of Middle Formative iconography and scripts. This database builds on the work of colleagues to expand—and expand access to—the known corpus of Formative Period art and writing. Further, the Corpus project is developing a mobile device application and website for visualizing complex relationships among datasets, including multimedia, spatial, and temporal information. Finally, the project has employed new imaging and digitalization techniques on archaeological objects, which has, in some cases, revealed previously undetected iconographic details on monuments such as La Venta's iconic Altar Four. This paper presents examples of ongoing work, project outcomes, and insights gleaned from efforts to date.

[101] *Chair*

Englehardt, Joshua [101] see Sumano, Kimberly

Enk, Jacob (MYcroarray)

[121] *Target Capture for Ancient DNA: Temperature, Time, and Tiling Density*

Bait-target hybridization (a.k.a., "target capture") is rapidly replacing PCR as the enrichment method of choice for ancient DNA sequencing projects. Though very successful in recent years, ancient DNA target capture outcomes vary substantially and could be better understood. Here, we performed a series of experiments to measure how three commonly-varied parameters—temperature, time, and bait tiling density—impact enrichment of short, rare targets embedded in complex DNA backgrounds. We found that specificity (percent on-target) and sensitivity (unique target reads recovered) varied with these parameters, sometimes in unexpected ways. Temperature was particularly impactful across the range typically employed in ancient DNA research (~45-65°C), and should be carefully considered when designing or optimizing an ancient DNA enrichment project.

Enloe, James [94] see Marks, Theodore

Enloe, James (University of Iowa) and James McGrath (University of Iowa)

[121] *A GIS Approach to Stratigraphy in Visually Homogeneous Rockshelter Deposits: Results from Woodpecker Cave*

The sediment stack at Woodpecker Cave (13JH202) does not possess an easily discernable stratigraphic sequence. Woodpecker Cave's deposits are a combination of visually homogeneous colluvium derived from glacial loess mobilized from above the rockshelter and variably-sized tabular roof fall blocks. The lack of visible stratigraphy has necessitated the creation of a digital model from which to analyze the spatial provenience of a variety of mapped objects in order to differentiate between sections of the sediment stack that may have originated from different anthropogenic and geogenic inputs. Of principal interest to this study are the spatial positions, orientations, and densities of plotted finds, two-shot plotted finds, and mapped roof fall. This study suggests that while the matrix composition remains the same throughout the sequence at Woodpecker Cave, patterns of intrusive geogenic and

anthropogenic materials change through time and space and are detectable in GIS.

[121] Chair

Enote, Jim [30] see Watson, Adam

Enverova, Deniz [199] see Kaya, Deniz

Epitropou, Anastasia [166] see Giblin, Julia

Eppich, Keith (Collin College)

[26] *Commerce, Autarky, Barter, and Redistribution: The Multi-Tiered Urban Economy of El Perú-Waka', Guatemala*

The ceramic database from El Perú-Waka' contains the record of the production, distribution, consumption, and disposal of some 50,000 sherds and 200 whole vessels. Patterns and fine details of the Classic Maya economy emerge from this expansive dataset. These include, but are not limited to, the marketing distribution of monochrome ceramics and the redistributive gifting of high-quality polychrome vessels. Unexpected patterns appeared as well, such as the apparent autarky of monochrome blacks in the late eighth century and the smattering of irregularly scattered thin-slipped ceramics of the Terminal Classic. In short, the ceramic database of El Perú-Waka' revealed a diverse set of economic relations. These patterns encompass commerce, autarky, barter, and redistribution. All of this hints at a Classic Maya economy of surprising complexity. This paper explores these complexities, especially noting how such patterns change through time as the Maya economy moved from its Late Classic heights to its Terminal Classic demise.

Epstein, Emily (University of Wisconsin -Milwaukee)

[244] *Household Climate: Great Basin Response to Climate Change Reflected by Intrasite Zooarchaeology*

Intrasite spatial analysis reveals zooarchaeological remains indicative of Great Basin hunter-gatherer household behaviors. Results indicate the presence and spatial distribution of activity types. Analytical techniques facilitated evaluation of ethnographic models to find the best match to the zooarchaeological situation. Households associated with disparate climatic regimes, while contextually equivalent, exhibit variable zooarchaeological signatures for subsistence, social, and spiritual life.

Erb-Satullo, Nathaniel (Harvard University)

[87] *Metal Production on Late Bronze-Early Iron Age Fortified Hilltops in the South Caucasus, c. 1500-600 B.C.*

One of the challenges facing the study of technological change and craft production during the Late Bronze and Early Iron Age in the Near East is a lack of information about the spatial and social contexts in which metal production occurred. A new program of survey and excavation aims to explore these issues in an ore-rich transitional zone between lowland and highland areas of the South Caucasus.

Fortified hilltop settlements dot lowland valleys as they narrow and rise towards the highlands. Surface survey identified traces of metal production at several of these hilltop sites. In 2015, excavations began at Mtsvane Gora, where surface survey in 2014 revealed metallurgical slag and Late Bronze–Early Iron ceramics in close proximity to a large wall encircling the site. Test excavations confirmed the associations apparent in surface collections, uncovering metal working implements and debris inside the walled area. These discoveries reveal the site's potential for assessing the relationship between craft production and other segments of society. In addition, the location of Mtsvane Gora on a major interregional route offers the possibility to examine links between technological change and the movement of people and materials through regular patterns of transhumance.

Erdman, Katherine (University of Minnesota - Twin Cities)

[11] *Continuing Heritage Education: Reaching Adult and Senior Learners*

Continuing education and adult enrichment courses offer readily accessible opportunities for archaeologists to engage a non-traditional learning group who are often already curious about archaeology and are relatively informed. Adult and senior students in these settings prefer discussions and debates to strictly information transmission; such an environment is conducive for presenting issues of cultural heritage and preservation. In 2015, these topics were introduced to two such audiences through different courses in the Twin Cities metro. This paper will examine qualitative and quantitative data gathered by the instructor through brief questionnaires given to participants before and after each course. The results will demonstrate what informed adult learners already know about heritage stewardship and what they take away from such courses, what they see are critical issues for preserving the past, and their suggestions for raising awareness of cultural stewardship more broadly. Such information will offer professionals insights for improving stewardship education and creating advocates of the general public.

[11] Chair

Erek, Cevdet Merih [184] see Basiran, Alper

Erlandson, Jon [55] see Braje, Todd

Ernenwein, Eileen G. [137] see Shreve, Nathan

Ernenwein, Eileen (East Tennessee State University), Jeremy Menzer (University of Arkansas) and Frederic Surmely (Université Blaise Pascal)

[145] *Ground-penetrating Radar and Photogrammetry in Medieval France: Results from the Auvergne*

The Medieval Period in Europe is well known from archaeological sites and historical records, including England's Domesday Book. The Auvergne of southern France, however, is a poorly studied upland region. This rugged environment of volcanic peaks contains a rich, yet mostly unknown medieval history. A research program is underway that includes archaeological survey, excavation, and geophysical survey at sites across the region. GPR survey in

June 2015 focused on unexcavated portions of Les Yvérats, the only medieval (eleventh–twelfth centuries) hamlet ever studied in the region. Additional test surveys were conducted at a nearby “comb” site, one of many 3-4 room pastoral structures visible in aerial imagery but poorly understood, and the medieval hillfort at Brión. GPR data were topographically corrected using photogrammetrically derived terrain models. Finally, GPR was used to explore a medieval tunnel site approximately 100 km to the south, where tunnel entrances are known but passageways are obstructed by sediment. Medieval tunnels were used as hiding places during times of war and to store cereals. Two previously unknown tunnel passageways were discovered, which will guide preservation efforts and help target excavations to better understand the site. GPR results will be presented in this poster.

Ertsen, Maurits (Water Resources / Delft University of Technology)

[138] *The Good, the Bad, and the Ugly in Ancient Water Systems. Comparative Remarks along the Axes of Small-Large and Dry-Wet*

In Scarborough's comparative work, when explaining the differences between Old and New World water systems, the differences between small-scale, local and imperial, large systems are important focus points for defining these differences. Furthermore, much of Scarborough's work suggests that the wetness and dryness of these worlds matter as well. Building on these key notions of the importance of environmental conditions in building understanding of water systems, this paper discusses the growing body of evidence that small, large, wet, and dry, are complex and cannot be easily associated with each other. It includes a critical discussion of the early over-arching models from “archaeology of power,” more specifically Wittfogel's model of hydraulic civilizations. True, several later ancient states encouraged the spread of irrigation systems by exerting power over vast areas, but new evidence on early water systems in the ancient Near East suggests the importance of smaller-scale community-based systems. A re-appraisal of the Hohokam irrigation sites along the Gila and Salt rivers in the same bi-axial comparison will provide additional material to discuss a fruitful comparative approach to ancient water systems.

Ervin, Kelly (Washington University St Louis) and Cameron Wesson (Lehigh University)

[4] *Spatial Literacy and Geostatistics in Archaeology*

Spatial frameworks of cultural activity can be quantified using a number of geostatistic computations available in Geographic Information Systems (GIS). These, too commonly “deterministic” models identify and display trends within a dataset. Although these results can be compelling, they also pose problems for archaeological interpretation by not including room for the ambiguity and unpredictability of human decisions and actions. Human behavior can be understood by the choices people make, but can human agency be revealed by numerically structured geospatial analyses? Bridging the gap between current GIS methodology and archaeological social theory, this paper discusses geostatistics as a mathematical method for giving meaning to the past, assumptions of the algorithms, and the importance of culture history in such archaeological studies.

Esdale, Julie [217] see Odess, Daniel

Espinosa, Alicia (Université Paris 1 - Panthéon Sorbonne), Nicolas Goepfert (CNRS-Paris1, UMR 8096 Archéologie des Amériques) and Vincent Chamussy (UMR 8096 Archéologie des Amériques)

[45] *Territoriality and Ceramic Distribution of the Virú-Gallinazo Populations on the Northern Coast of Peru: New Insights Using Spatial Analysis*

Since the Virú Project, the use of Castillo Decorated as the principal chrono-cultural element to characterize the Virú-Gallinazo presence laid to a “Gallinazo illusion.” Unfortunately, it appears that our knowledge about the Virú-Gallinazo populations is still limited, and most of the time we define them through the prism of the Mochicas. In order to understand who these groups were, we analyzed the spatial distribution of the following ceramics styles through the northern coast using GIS: Negative (Gallinazo and Carmelo Negative), Castillo Decorated, and Gallinazo White-Red-Orange. These styles compose the Virú-Gallinazo complex as it was defined by Bennett, Ford, and all the member of the Virú project. We registered 476 sites between the Piura and Huarmey valleys. These data allow us to present in this paper the principal results of an intra-site, regional, and macro-regional analyses. With this research, we identified three patterns of site distributions at the regional scale, and specific associations between the ceramic styles and their relation with mochica's artefacts.

Espinosa-Pesqueira, Manuel E. [179] see Medina-González, Isabel

Esplin, Nathan [207] see Toyne, Jennifer Marla

Estabrook, Virginia Hutton [39] see Sobel, Elizabeth

Estrada-Belli, Francisco (Tulane University) and Alexandre Tokovinine (Peabody Museum, Harvard University)

[256] *Nested Hegemonies in the Holmul Region*

The recent finds at Holmul has opened a narrow window on the hitherto largely unknown dynastic history of this medium-sized kingdom in eastern Peten and on the complexities of Late Classic lowland Maya hegemonic relations. We now have a royal tomb, a palace, and a funerary temple with dedicatory texts that can all be attributed with a certain degree of confidence to a single Late Classic ruler with ties to Naranjo and Kaanul (Snake Kingdom). This set of contextual information allows us to reconstruct in some detail the political situation of this kingdom in the decades before and after the all-important capitulation of Tikal at the hand of the Snake Kingdom in the sixth century. The texts also inform us about how familial ties between rulers were integral to the strategies of assimilation, cajoling and/or conquest favored by the Snake kings. The emerging new pattern of regional ties suggests that nested hegemonies may have been a more common phenomenon in Late Classic political organization than previously thought.

Etnier, Michael [296] see Fitzhugh, Ben

Eubanks, Paul (The University of Alabama)

[98] *Caddo Salt Production in Northwestern Louisiana*

During the late seventeenth and early eighteenth centuries, northwestern Louisiana was known as a major hub of the salt trade. However, recent excavations at the Drake's Salt Works Site Complex suggest that this reputation may have been earned relatively late. These excavations have also raised

the possibility that many of the salt producers at this saline were non-locals who visited northwestern Louisiana primarily for its salt resources. While the salt makers at Drake's Salt Works would have been able to exploit the European demand for salt and salt-treated commodities, there is little evidence that making salt was more than a seasonal or short-term activity. Thus, it would appear that these salt producers were able to meet and profit from the local demand for salt without the need for full-time economic specialization.

Eusebio, Michelle (University of Florida), Philip Piper (The Australian National University), Fredeliza Campos (The Australian National University), Andrew Zimmerman (University of Florida) and John Krigbaum (University of Florida)

[134] *Using Organic Compound-Specific Stable Isotope Ratios to Identify Animals in Prehistoric Foodways of Southeast Asia*

Recent advances in isotopic analysis have enabled archaeologists to move beyond subsistence and diet toward the full chaîne opératoire of foodways that includes inference of past culinary practices. Together with faunal identification, isotopic analysis of organic residues derived from ancient pottery helps to create linkages between material culture (i.e., pottery) and how animals were prepared and consumed, which, in turn, may be used to infer aspects of identity. Isotopic databases of modern animal fats have been established to differentiate organic residues by faunal category. However, these databases may be area-specific. For example, variations in carbon isotope ratios may result from myriad extrinsic factors. Southeast Asia has modern databases for assessing bulk carbon and nitrogen stable isotope ratios from charred surface residues on pottery, but none for the carbon specific organic molecules from both surface and absorbed residues. Thus, this paper presents compound specific isotopic analysis of palmitic (C16) and stearic (C18) acids of extracted lipid residues from modern pots with known cooking histories and modern faunas from southeast Asia. This database will be compared with others, and its ability to assist in interpreting southeast Asian prehistoric foodways in the region will be discussed.

Eva, Lemonnier [96] see Cyril, Castanet

Evans, Victoria [65] see Lail, Warren

Evans, Adrian (University of Bradford)

[269] *Crowd Sourcing Archaeological and Palaeontological Survey*

Fossilfinder.org is a citizen science project that enables the public to engage directly with palaeo/archaeological research. Data, in the form of images, was collected from research areas to the east of Lake Turkana. The regions studied are those well known as fossil bearing regions dating to periods of interest in human evolution studies (up to 4 million years old in parts). In the first two seasons of research, 1 million images of the ground surface were captured at a resolution of 30 pixels per cm (on the ground). Images were collected using two methods, 1) rectangular areas in predefined locations, and 2) transects cutting across varying geological exposures. This resolution was selected to correspond with normal visual acuity for standing or partially crouched position. The images were presented through an interactive website and users were encouraged to answer a series of questions about each image. These questions were aimed to produce data pertinent to the localised geological variation and specific locations where fossils were eroding. This paper presents the first five months of data collected through this citizen science project and discusses how those findings have influenced our data collection methods and how they can assist with palaeo/archaeological research.

[214] *Discussant*

[214] *Chair*

Evans, Amanda (Tesla Offshore)

[249] *Discussant*

Everhart, Jennifer (Stony Brook University)

[184] *Cracking Concretions: Methods for Removing Carbonate Encrustations from Faunal Remains*

Calcium carbonate encrustations of faunal materials are a problem that limits analysis of faunal materials from a wide variety of regions and time periods. In many locations they are associated with climates with persistent or increased precipitation. This precipitation percolates through the sediments of the stratigraphic column, mixing with calcium carbonate. This mixture is then gradually deposited throughout the stratigraphic column, encasing archaeological materials in hardened carbonate concretions. These accumulations, which may surpass one centimeter in thickness and completely surround remains, often make identification as well as studying surface features such as cut marks virtually impossible. Using a large Terminal Pleistocene faunal assemblage from the Levantine Epipaleolithic Period, this poster reports the results of multiple experiments using a variety of chemical and mechanical techniques to efficiently remove carbonate deposits while avoiding significant osteological degradation.

Evin, Allowen [176] see Linderholm, Anna

Fagan, John L. [155] see Hulse, Eva

Fairley, Helen (US Geological Survey), Joel Sankey (US Geological Survey) and Joshua Caster (US Geological Survey)

[254] *Sustaining Sites in a Sediment-Deprived System: Designing a Monitoring Program to Assess Glen Canyon Dam Effects on Downstream Archaeological Sites in Grand Canyon*

In 1963, construction of Glen Canyon Dam on the Colorado River was completed, profoundly altering the downstream riverine ecosystem in Grand Canyon National Park. One consequence of the dam and its subsequent operations has been an 85 percent reduction in the amount of sediment flowing into the Grand Canyon. The paucity of sediment to re-supply sand bars and replenish sand dunes along the river shoreline has not only altered the bio-physical dynamics of the riverine ecosystem but has also affected the physical settings and geomorphologic stability of numerous archaeological sites. For the past decade, U.S. Geological Survey scientists have been exploring various tools and methods to accurately capture the effects of ongoing dam operations on downstream archaeological resources. We are now in the process of developing a comprehensive monitoring plan based on an ecosystem framework and incorporating diverse measurements and classification procedures to objectively assess how current dam operations impact the physical integrity of archaeological sites. Our approach incorporates measurements of topographic change, sediment flux, vegetation growth, local meteorological conditions, and other parameters to help land managers understand how dam operations have affected the eco-geomorphological resilience of sites and to devise

appropriate methods to mitigate effects from future dam operations.

Fajardo Bernal, Sebastian (Sebastian Fajardo Bernal)

[97] *Prehispanic Settlement Patterns of the Sogamoso Valley*

The results from a settlement pattern study covering 123 square kilometers in the Sogamoso Valley in the northern part of the Muisca area are presented. The survey revealed that sedentary occupation there began during the Herrera Period (400 B.C.–800 A.D.) and consisted only of a few small hamlets and some scattered farmsteads. After 800 A.D., population increased dramatically, reaching a few thousand inhabitants organized in several local communities within the survey area. The largest of these local communities was centered on the settlement at Sogamoso where the major Temple of the Sun described in sixteenth century documents was located, although the total population of this community numbered less than 1,000. After 1200 A.D., regional population diminished. The inhabitants of the valley avoided locations prone to flooding, but there is no indication of major construction efforts to increase production and no sign that chiefs gained wealth through agricultural or other economic activities.

Falabella, Fernanda (Departamento de Antropología, Universidad de Chile), Silvia Alfaro (FONDECYT Proyecto N° 1121097, Santiago, Chile), María Teresa Planella (Sociedad Chilena de Arqueología, FONDECYT Proyecto), Matthew T. Boulanger (University of Missouri Research Reactor Center, Co) and Michael D. Glascock (University of Missouri Research Reactor Center, Co)

[57] *Testing the Social Aggregation Hypothesis for Llolleo Communities in Central Chile with NAA of Ceramic Smoking Pipes and Drinking Jars*

La Granja site in central Chile has been considered a social aggregation site for Llolleo communities based on an unusually large smoking pipe assemblage, ritual features, and an abundance of drinking jars. The hypothesis states that people from a wide region gathered here for group cohesion purposes mediated by rituals involving the smoking of psychoactive substances and drinking of fermented beverages. Based on the potential of NAA to fingerprint ceramic artifacts' raw material sources, we tested if ceramic smoking pipes and pottery found in La Granja showed chemical groupings that support the idea that people traveled from several communities with their utensils to this site. Our results show that smoking pipes and their associated pottery have similar mineralogical characteristics and that the whole sample is organized in only two chemical groups that likely represent the clay production sources for these artifacts. Our conclusion is that, if pipes and pottery are used as a proxy for the circulation of people, social networks might have been more restricted in the Llolleo social system than previously thought. Apparently La Granja, though a primary center for group activities, might not be functioning on a regional and supra-regional basis.

Falk, Emily [90] see Napoleon, Taylor

Fallu, Daniel (Boston University) and Justin Holcomb (Boston University)

[184] *The Role of Bronze Age People in the Post-Bronze Age Landscape: An Integrated Geoarchaeological Approach to Site Formation at Mycenae, Greece*

While human-landscape interaction has been a key question in the archaeology of early complex societies, little research has focused on the effect of occupation on the landscape post-abandonment. At Mycenae, a Late Bronze Age citadel in southern Greece, two distinct deposits, one anthropogenic and one natural, were identified as covering archaeological remains dating to the twelfth century, B.C. Here, we present an integrated method combining micromorphology, Fourier Transform Infrared (FTIR), and X-Ray Fluorescence (XRF) analyses intended to target local environmental change during a period of abandonment associated with the Early Iron Age. Bulk samples and thin sections from 1.3 m of these two deposits were taken at 5 cm intervals and analyzed in order to record changes in microstructure, mineralogy, and elemental proportions resultant from changing environmental conditions and soil formation. Through this approach, we hope to answer two key questions: How did the intensive occupation of Mycenae during the Bronze Age predetermine the eventual site formation during the Early Iron Age, and to what extent did the natural environment dictate change? By investigating multi-scale processes of post-abandonment site formation, we hope to shed light on the long-term impact of human-landscape interaction during a key transition in Greece.

Fankhauser, Amber [245] see Burnett, Katherine

Fargher, Lane F. [27] see Antorcha Pedemonte, Ricardo

Fargher, Lane (CINVESTAV del IPN)

[178] *Power in Middle Range Societies: A Cross-Cultural Perspective*

For most of the second half of the twentieth century, Neoevolutionary theory dominated explanations for the rise of social complexity and inequality. However, beginning about two decades ago, scholars began to problematize this framework. The resulting body of theory, referred to as "alternative pathways to complexity," introduced concepts of structure and agency and moved away from functionalism and systems theory. Despite these improvements in our theoretical toolkit, much scholarship continues to focus only on the agency of the "elite" and ignores the strategic behavior of the subaltern. In this paper, we seek to expand "alternative pathways" by applying collective action theory to the rise of middle-range societies. In the following discussion, we apply collective action theory to a broad cross-cultural sample of middle-range societies drawn from Polynesia, Melanesia, southeast Asia, Africa, south Asia, North America, and South America. The results of our statistical analysis reveal that emergent elites (aggrandizers) were only able to manipulate certain revenue sources when they sought to monopolize power. Apparently, the strategic behavior of the subaltern is a key factor in the emergence of inequality and complexity. Our results indicate that collective action theory provides insights into the development of social complexity.

Faria, Eliane (Eliane Faria)

[263] *Amazonian Landscapes: The Characteristics of Anthropogenic Landscapes in the Middle Xingu River (Pará, Brazil) from Pre-Colonial to Contemporary Times*

Based on a historical ecology approach, this work aims to investigate interactions between indigenous societies and the natural environment expressed in landscape changes through the analyses of their long term occupation of the Middle Xingu River. My goal is to show the specificities of the indigenous settlements in the region considering the multiple aspects of this process in the human settlement of Amazonia. Although not producing great changes in the landscape, small groups of horticulturalists that settled in the Xingu region left their contribution in cultural and historical terms. Those are expressed, for instance, in the management of plants and forest products in anthropogenic dark earth sites. In a long term perspective, I intend to show the alterations in the landscape that result from: (1) the pre-colonial land management; (2) the colonization of the Xingu region by the Portuguese since the seventeenth

century, and (3) the impact of Belo Monte hydroelectric plant over both the indigenous culture and the archaeological heritage.

Farley, William (University of Connecticut)

[61] *A Preliminary Analysis of Calluna Hill (CT 59-73), an Early 17th-Century Pequot Village*

This paper describes the results of four seasons of field research and laboratory analyses at Calluna Hill (CT 59-73), a small Pequot village burned during the English retreat from the battle at Mystic Fort, part of the 1630s Pequot War. The project uses environmental, spatial, and artifactual data from the site to undertake a study of culture change in southern New England's contact period in order to better understand the role of intercultural exchange in colonial settings at the domestic scale. By combining survey, excavation, and laboratory analysis, this research will offer insights into Native American lifeways during the 1630s, a key but understudied period owing to a lack of identified sites. Preliminary results, research questions, and interpretations will be presented as a part of a broader comparative study of native and Euro-American lifeways in the seventeenth century.

[61] *Chair*

Farrell, Mary [8] see Bates, Brian

Farris, Glenn (Farris & Schulz)

[82] *Indian Family Housing at Mission San Juan Bautista: Archaeology and Ethnohistory*

Although the Indian converts resident at Mission San Juan Bautista numbered as high as 1,248 (in 1823), the available adobe housing for families could only accommodate perhaps a fifth of this number. Archaeological testing on the Indian family housing site for this mission was combined with Spanish sacramental records, annual reports, and other documents to suggest individuals and their families most likely have been allotted this scarce housing. The aim of this study is to attempt to bring the Indian presence at the mission to life and thus rectify the unfortunate pattern of seeing missions simply in terms of the priests and soldiers and a few other "gente de razon." In many cases we can follow individual converts from their original native villages and the personal name they had right on through their lives at the mission, including occupations and relations thanks to a valuable online database held at the Huntington Library.

Farstad, Kendra [27] see Russell, Bradley

Fash, William L. [129] see Sugiyama, Nawa

Fash, Barbara (Harvard University), Jorge Ramos (Instituto Hondureño de Antropología e Historia), Marc Wolff and William Fash (Harvard University)

[162] *Sacred Water Mountains of the Copan Valley: A View from Rastrojon*

The temples and stone monuments of Copan are replete with symbols of water and sustenance, both driving forces in the development of complex society throughout the Maya region and greater Mesoamerica. Like other urban environments, Copan harnessed the power and religious nature of water, mountains, maize, ancestors, and the divine ruler, juxtaposed to their dualistic counterparts of fire and drought, to construct their urban landscape, cosmovision, and social structures. Research on ancient water management facilities, settlement patterns, shrines, and water-related imagery associated with both the built environment and sacred places permits us to assess how people were once integrated around these vital elements of the natural and social worlds. In this paper, we will present new data from investigations at the hillside residential site of Rastrojon that enhances understanding of the sacred water mountain concepts and practices we interpret as being celebrated, managed, and deified on the temples and landscapes of ancient Copan, both at the state (Principal Group) and community (outlying residential groups) levels.

Fash, William (Harvard University) and Barbara Fash (Peabody Museum, Harvard University)

[212] *Mythological Markers, Shifting Boundaries and Exchange in the Late Classic Copan Kingdom*

Delimiting the "core" area of the Late Classic Copan kingdom may be enhanced through analysis of its shared mythology, associated with the ballgame. Placed at the geographic and social center of the royal compound, the main ballcourt of Copan established a narrative of mythological macaws, and a Macaw Mountain, that spanned the entire dynasty from the fifth–ninth century C.E. The geographic distribution of archaeological sites with stone macaw head ballcourt markers, all of which had Copador pottery in association, allows us to refine the consensus model of Copan's Late Classic domain. The very large initial territory at the onset of the kingdom's history included Quirigua and other areas north and west of Copan, much reduced by the late eighth century as various former vassal communities declared their independence in public inscriptions. A southerly distribution of the other sites with macaw head bench markers supports ceramic evidence adduced by ceramicists that the Copan Dynasty favored trading partners (and allies) to the south and east at the end of the Late Classic Period. What became the final 'core' area may have been involved in procuring and trading macaw feathers, ideologically centered on a mythological—or actual—Macaw Mountain in this region.

Faugere, Brigitte (University Paris 1)

[175] *The Scales of the Landscape in Tarascan Rock Art of the Postclassic Period (A.D. 1200–1520): The Petroglyphs of El Paraiso, Zacapu, Michoacan (Mexico)*

As in other regions of the world, the rock art of northern Michoacan (Mexico) has to be seen within a given landscape. But the study of the El Paraiso petroglyphs (Zacapu) shows that there is in reality a complex set of intricate scales of landscapes: since a macro scale that involves the whole surrounding environment to a micro scale where the engraved blocks themselves form a sacred geography. The 3D survey realized recently highlights the subtle dialogue between the location of the blocks, the orientation of the decorated panels, and the iconography. A part of the myths of Tarascan people of the Postclassic Period seems to become accessible.

Faught, Michael (SEARCH, Inc)

[21] *Beringia is Not the Sole Source of People in the New World*

I challenge the belief of biological and archaeological anthropologists that Beringia is the only place people have come into the Americas, even if along the coast. I show how researchers affirm their consequent, don't show direct historical continuity in areas where gene samples are modern, can't find any other than Dyuktai/Denali/Dene cultures archaeologically, nor have evidence of north to south, or west to east propagation after intrusion. In its place, I propose South America as the locus of the genomic stillstand, and that it could result from people displaced by sea level rise from the Sunda Shelf, or other S.E. Asian location. Monte Verde and Paisley Caves are near contemporaneous potential examples of propagation from a more central node, recent and robust genomic studies can be argued as consistent phylogenetically, and plant and animal domestication, settlement, and complex societies have earliest examples in South America. Speculative arguments will be made for an initial equatorial landing point from a full Pacific Ocean crossing. I propose that S.E. Asia is the homeland of the stillstand Amerindians, and they met up with Beringian Amerindians at the end of the last Ice Age, but other Holocene migratory histories are indicated, as well.

[249] *Moderator*

Faught, Michael [290] see Arbuthnot, Michael

Faulkner, Ivy (University of Minnesota)**[70]** *Why Classics Needs Anthropology*

While it is true that theoretical advancements are slow to cross disciplinary boundaries, when disciplines by necessity overlap, it seems almost willful ignorance that perpetuates old frameworks. For example, it has been over 30 years now that anthropology and colonial studies have come to terms with the complexities of identity in colonial contexts and yet scholars in related disciplines, such as Classics, still argue over which label imposed by colonizers should be used for which indigenous group in particular areas. What is the utility of these types of discussions? Rather, it is essential that more scholars look towards interdisciplinary methods in order to advance our overall understanding of colonial encounters in the past. Therefore, this paper looks to address specifically how anthropological theories on colonialism can and should be applied to the study of culture contact and colonization in the Classical world.

Faulseit, Ronald (The Field Museum), Gary Feinman (The Field Museum) and Linda Nicholas (The Field Museum)**[171]** *Wealth Inequality in the Late Classic Valley of Oaxaca: A Domestic Perspective*

The Late Classic Period in the Valley of Oaxaca is marked by shared practices in residential organization, design, the layout of houses, and domestic artifact assemblages both within and between sites throughout the region. This degree of homogeneity allows for cross-site comparison of excavated residences to examine household wealth inequality on a systemic and regional scale. In this paper, we employ different indices to explore multiple lines of evidence (e.g., patio size and other architectural measures as well as access to portable goods) to quantitatively measure wealth disparity among 15 Late Classic residences spanning five sites in the Valley of Oaxaca. Individual axes of inequality are not entirely consistent, thereby illustrating that wealth may be constituted differently in distinct contexts. Despite challenges of sampling, the overall pattern reveals that the extent of wealth disparity among households (large and small, elaborate and basic) is less extensive than might be expected for an urban society or is found in other contemporaneous Mesoamerican cases.

Faulseit, Ronald k. [231] see Garcia, Dante

Fauvelle, Mikael (University of California, San Diego)**[20]** *Archaeological Reconnaissance at Fracción Mujular: A Small Site with Big Connections*

Located on the Pacific Coast of Chiapas, the site of Fracción Mujular is best known for three carved stela bearing Teotihuacan associated stylistic elements, first identified by Carlos Navarrete in the 1960s. The relatively modest architecture of the site, combined with evidence for long-distance connections, makes Fracción Mujular an interesting place to investigate the impact that inter-regional political and trade relationships during the Early Classic had on the lives of common people. This paper presents the results of preliminary archaeological surveys conducted at Fracción Mujular during the summer of 2015. This work mapped four occupation groups at the site and conducted systematic surface collections from each area. The results of this research have expanded the occupation of Cerro Bernal into the Terminal Classic, and have solidified evidence for material interactions with Central Mexico. Additionally, topographic and architectural maps of the site have helped clarify the nature of the relationship between Fracción Mujular and the nearby regional center of Los Horcones. I argue that the proliferation of Central Mexican stylistic elements and material artifacts into small sites such as Fracción Mujular indicates that coastal Chiapas was closely connected to Central Mexican political and trade networks during the Early Classic.

Fayek, Mostafa, Brooke Milne (Dept. Anthropology, University of Manitoba, Winnip), Ryan Sharpe (Dept. Geological Sci., University of Manitoba, Win), Rachel ten Bruggencate (Dept. Anthropology, University of Manitoba, Winnip) and Lawrence Anovitz (Chemical Sciences Division, MS 6375, P.O. Box 2008)**[214]** *Obsidian Hydration Dating Using SIMS and the LEXT Laser-Microscope*

Obsidian hydration dating (OHD) is based on the premise that when an obsidian artifact is manufactured, the fresh surface exposed immediately begins to hydrate. A state-of-the-art obsidian hydration dating technique utilizes secondary ion mass spectrometry (SIMS) to measure H diffusion profiles in obsidian artifacts and the depths of the resulting sputter pits by a stylus-type profilometer. The pit depths are matched with the SIMS H diffusion profiles, which are compared to diffusion profiles of time-calibrated obsidian standards with similar chemical compositions to the artifacts. The major source of error with this technique is the precise measurement of pit depths because sputter pits often have rough surfaces and the depth resolution is dictated by the width and sharpness of the stylus. Here, we use a Olympus OLS 4000 LEXT 3D laser measuring microscope to image and measure depths of sputter pits on Pachuca obsidian that was exposed to water vapor at temperatures from 30°C to 75°C and from 600 days to 1,400 days. We compare the depths of the sputter pits obtained by traditional stylus-style profilometry and the LEXT microscope. This new 3D imaging approach promises to produce improved depth resolution and consequently much more precise obsidian hydration ages.

Fazioli, K. Patrick (Mercy College)**[161]** *Trade, Technology, and Identity: Current Approaches to Pottery Studies in Late Antique and Early Medieval Europe*

This paper will survey some of the most interesting and innovative recent contributions of pottery studies to our knowledge of late antique and early

medieval central Europe (circa fifth to tenth centuries C.E.). Since an exhaustive review of the many national traditions across this culturally and linguistically diverse region is beyond the scope of this paper, the focus will remain on three broad areas of inquiry. First, what insights can pottery offer into changing patterns of exchange and networks of trade in the late antique and early medieval world? Second, what can pottery reveal about localized and regional modes of production, especially in terms of manufacturing traditions and technological style? Third, what (if anything) can pottery tell us about the expression of individual and collective identities in the post-Roman era? For each of these three themes, we will review how research agendas have evolved over the past several decades, identify key intellectual debates in the contemporary scholarship, and consider the promises and challenges of future research.

Feathers, Valerie (Louisiana State University)

[238] *Dietary Implications from an Inundated Shell Midden at a Classic Maya Salt Work*

During the 2013 field season, an inundated shell midden was excavated at the underwater ancient Maya salt production site of Eleanor Betty, one of the Paynes Creek Salt Works. Excavations revealed that the midden was located 16-30 cm below the sea-floor and extended both inside and outside of an underwater wooden structure. During the spring of 2015, analyses were performed to identify the shell species, assess the nature of the midden (cultural or natural), and evaluate dietary implications of the shell remains. Approximately 4,733 number of individual specimens (NISP) were recovered, with 3,979 fragments identified as *Crassostrea rhizophora* (red mangrove oysters). A total of 264 minimum number of individuals (MNI) of *C. rhizophora* were present. Several lines of evidence are presented to indicate dietary use of the oyster shells by the salt workers: the shell was mixed with charcoal and briquetage, indicating this was a cultural midden. Butcher marks were found on 37 percent of the shells, with a notch being the most abundant break. A narrow range of shell sizes, as shown by Height-Length Ratio (HLR) measurements, indicate the shell was deposited as a single event.

[238] *Chair*

Feathers, James (University of Washington)

[292] *Luminescence Dating at Alice Boer site, Brazil*

The Alice Boer site, in the Rio Claro region of São Paulo state, Brazil, gained some renown in the 1970s as a possible pre-Clovis site. It was excavated in the 1960s by Maria Beltrão and produced a questionable radiocarbon date of 14.2 ± 1.2 B.P. (uncalibrated) drawn from a very small (for conventional dating) charcoal piece near the bottom of an ant-disturbed cultural layer. A TL date on burned chert of 11 kya was also produced. The presence of artifacts in the lower layers and the integrity of the site have been disputed. The University of São Paulo has recently re-investigated the site, because it may represent an early incursion of a bifacial industry into Brazil. This presentation discusses the results of single-grain OSL dating of seven samples, which range in age from 5 to 30 ka, and the relationship of the ages to cultural material. Additional OSL dates from the Rio Claro drainage are also presented to put the dates in geological context.

[292] *Chair*

Fedyaniak, Kristine [190] see Lints, Andrew

Feeley, Frank (CUNY Graduate Center) and Lilja Pálsdóttir (Fornleifastofnun Íslands)

[210] *Sandbagging the Past: Rescue Excavations at a Medieval Icelandic Fishing Station*

Since its discovery in 2008, archaeologists have been performing rescue excavations at the site of Gufuskálar in Western Iceland. During the Medieval Era, this site was home to one of the largest commercial fishing operations in Iceland at that time. Little is known about these early commercial ventures and most of these early fishing stations have been destroyed by later episodes of town-building. Gufuskálar is one of the best preserved examples of a medieval fishing station but, as with many coastal sites around the world, is currently being destroyed by coastal erosion. Attempts have been made to mitigate the damage in between field seasons, but there has been little success.

Fehrenbach, Shawn

[33] *Discussant*

Fehren-Schmitz, Lars (UCSC Anthropology)

[62] *A Paleogenetic Perspective on the Early Population History of the High Altitude Andes*

The peopling of the high altitude Andes marks an important episode in South American population history, eventually leading to the formation of the most complex societies of the late precolumbian period, namely Wari, Tiwanaku, and Inca. Little is known about how population dynamic processes and genetic adaptation to physical stressors like hypoxia shaped the genetic diversity of the Andean highland populations over the ~10,000 years of human presence in high altitude leading to the emergence of these empires. Paleogenetic investigations in the highlands have been limited to populations not older than ~1,500 years. The molecular evolutionary processes associated with adaptations to hypoxic stress have only been studied in modern populations. Thus, these studies are prone to potential bias resulting from past demographic events. Here, we report on genome wide data from precolumbian individuals deriving from high altitude sites dating to ~8500–560 B.P. We gain new insights into the ancestry of early Andean highlanders, population relationships, and admixture events that help us to better understand the interaction of Andean groups with low altitude groups. Furthermore, we identify that selection must be considered as one of the driving factors of the adaptation to hypoxia in the central Andean highlands.

Fehren-Schmitz, Lars [117] see Verdugo, Cristina

Fehren-Schmitz, Lars [276] see Washburn, Eden

Feinman, Gary [171] see Faulseit, Ronald

Feldman, Michal [223] see Krause, Johannes

Femenias, Blenda (Catholic University of America)**[172]** *The Colors of the Coya's Robes*

Of the many surviving precolumbian Inka textiles, especially those made in tapestry and featuring tukapu (rectangular design blocks), only a few full-size garments are associated with females. There are, however, many miniature female garments. Inka textiles also tend to follow a limited number of color combinations, although some textiles show a more diverse, even exuberant mixture. Felipe Guaman Poma de Ayala, in his section on the coyas (queens), attributes a specific set of colors to each coya, naming the main color used in her mantle (liklla), skirt (aksu), and sash (chumbi). He tells us, for example, that Mama Oclo had a yellow mantle and a dark blue skirt—colors not visible in his line drawings. In the colonial period the situation changes markedly, as many of the most spectacular surviving garments are women's mantles. While there is some literature on the colors associated with the Inkas (e.g., the red puma), the dyes in the textiles, and the colors that Murúa shows for female dress, overall the correlation of colors with people and garment types has not been explored in depth. This paper considers the question of color as closely correlated with high-status Inka female's garments.

Fenn, Mallory, Gabrielle Vail (New College of Florida), Gail Fish and Vail**[92]** *Beyond the Utilitarian: Spindle Whorls from Burials and Caches in the Maya Area*

Technologies for spinning fibers into thread by hand have changed little in Mesoamerica since they were first introduced. Made primarily of perishable materials, however, the wooden spindle and the fibers themselves are generally no longer present in the archaeological record. What does survive, however, are spindle whorls—spherical artifacts used to weigh down the spindle to keep it anchored during the process of spinning. In the Maya area, these artifacts are rarely found in primary contexts; instead, they are encountered most frequently in caches and burials. They are also seen throughout both the Maya area and central Mexico being worn by female deities with associations of fertility and often with water and rain making. This poster examines what this patterning says about the functions and uses of spindle whorls in both the utilitarian and symbolic spheres during the Late Classic Period (c. 600–900 C.E.) in the Maya Lowlands.

Fenn, Thomas (Yale University), Jeffrey Fleischer (Department of Anthropology, Rice University), Stephanie Wynne-Jones (Department of Archaeology, University of York), Edward Pollard (British Institute in Eastern Africa (BIEA)) and Tom Fitton (Department of Archaeology, University of York)**[269]** *Economic Changes through Time along the Tanzanian Swahili Coast, as Seen through the Examination of Non-Ferrous Metals and Metallurgical Technologies*

Historic Swahili towns along the east African coast played prominent roles in the triangular Indian Ocean maritime trade linking east Africa with India and the Persian Gulf/Red Sea, but their impact and the extent of economic changes through time at these towns are still poorly understood. Examining non-ferrous metals, many of which were imported and reworked locally, can serve as a proxy to understand the impact of Indian Ocean trade on local economies, particularly with regard to the consumption of semi-exotic materials and finished goods. Copper-based metals were relatively commonly imported, but they also were locally worked and some even may have been produced locally or regionally. Therefore, studying these metals and their metallurgy from Swahili sites in Tanzania can provide insights into socio-economic aspects such as organization of production and workshops, consumption patterns as well as networks connecting these sites to the hinterland and the Indian Ocean economic community. To that end, copper-based metals were examined from several Swahili archaeological contexts along the Tanzanian coast dating from the seventh cent. C.E. to sixteenth cent. C.E. Results of chemical and isotopic analyses identified imported metals from multiple locations, while discussion of potential indigenous metal production also is presented.

Fennelly, Katherine (University of Sheffield)**[25]** *Dublin's Bedford Asylum and the Material Legacy of the 'Industrious Child'*

This paper will determine the extent to which the concept of 'the child' and 'childhood' was incorporated into the design of public institutions for the reception of children in the early-nineteenth century. The primary case study of this paper will be the Bedford Asylum for Industrious Children, a purpose built institution constructed adjacent to the North Dublin Union House of Industry in Ireland. Particular attention will be given to the frequent mention of the asylum in the records of the House of Industry during the years of the Napoleonic Wars, when young boys deemed old enough were released into the army for service in the conflict. Towards the end of the wars, this practice was suddenly and conspicuously halted. This paper will examine the Bedford Asylum within its wider institutional context, and compare the built environment of the building for the reception of children with the adjacent workhouse and asylum buildings constructed for adults, to determine what material features can be discerned in the architecture of the Bedford that make it specifically suitable for children.

Fenno, Matthew [29] see Freeman, Jessica

Ferguson, Jeffrey (University of Missouri), Barbara Roth (UNLV) and Katelynn DiBenedetto (UNLV)**[64]** *Obsidian Procurement Strategies at the Harris Site*

The Harris Site is a large pithouse village in the Mimbres Valley of southwestern New Mexico. Many of the twenty structures (recently excavated) are organized into five discrete clusters that have been interpreted as the remains of extended family corporate groups. Some of these groups apparently had more wealth and social power, and these differences may be tied to both land tenure and ritual sponsorship. We use obsidian provenance data to explore differences in obsidian procurement strategies between households at the Harris Site. All obsidian artifacts excavated during the eight field seasons of UNLV-sponsored fieldwork at the site have been subjected to X-ray fluorescence analysis at the MURR Archaeometry Laboratory. This assemblage of nearly 2,500 artifacts represents the largest known study from a single site in the southwest. The assemblage includes primarily obsidian from Mule Creek, but it also most other known sources in New Mexico and eastern Arizona and a still unknown minor source. Many of these artifacts are from dated contexts that allow the examination of patterns of obsidian procurement through time as well as within households and household clusters. These data can further illuminate social relationships and access to obsidian by households at the Harris Site.

Ferguson, Jeffrey [66] see Van Keuren, Scott

Fernandez, Andrew [67] see VanPool, Christine

Fernández, Mercedes Grisel [176] see Scheinsohn, Vivian

Fernández, Pablo Marcelo [176] see Scheinsohn, Vivian

Fernández Eraso, Javier [125] see Alonso Eguíluz, Mónica

Fernandez-Gotz, Manuel (University of Edinburgh)

[60] *Hierarchies and Heterarchies in Iron Age Europe*

Traditionally, Iron Age communities have been depicted as hierarchical, triangular societies, with elites at the top of the social pyramid and a strong warrior tradition. However, archaeological evidence reveals very varied patterns of societies during the First Millennium B.C. in Europe, from those that display marked signs of social hierarchy, to others where social differentiation was much less pronounced. This paper aims to contribute to the task of rethinking Iron Age communities from the perspective of diversity, using the concepts of 'economies of power' and 'heterarchy' as starting points. Broadly speaking, it is possible to make a distinction between mechanisms of 'political economies' that develop inequalities and hierarchies, and others of 'moral economies' that emphasise egalitarian values.

Fernández-León, Elisa (Universidad de Costa Rica) and Geoffrey McCafferty (University of Calgary)

[163] *Change and Continuity in the Greater Nicoya Region of Pacific Central America: A Comparison of Two Bagaces to Sapoa Transitional Areas*

Ethnohistorical sources describe migrations of Mesoamerican peoples into the Greater Nicoya region of Pacific Nicaragua and northwestern Costa Rica during the Classic to Postclassic transition, ca. 800 C.E., a period known regionally as the Bagaces and Sapoa periods. Recent research has targeted this transition in order to better understand the material culture dynamics, as a means to further understand historical linguistic and genetic data. This paper contrasts two case studies: one from the Guanacaste sites of Finca Chiva, Villa Aventura, and Los Platanos; and the Nicaraguan sites of Santa Isabel and El Rayo. Consideration of such attributes as mortuary practices, settlement patterns, and decorated ceramics all contribute to an empirical evaluation of the migration claims. Among the conclusions is a critical reconsideration of the 'Greater Nicoya' concept, as well as evidence with other parts of Central America.

Fernandez-Lopez De Pablo, Javier (Institut Català de Paleoeologia Humana i Evolució Social (IPHES))

[72] *Discussant*

Fernández-López de Pablo, Javier [72] see Lozano, Sergi

Fernandez-Perez, Natasha (University of Puerto Rico - Rio Piedras) and Isabel Rivera-Collazo (University of Puerto Rico - Rio Piedras)

[156] *Plants used in the Indigenous Caribbean: A Database of Plants in Reference to the Archaeological Literature*

Archaeological studies have demonstrated that the dynamics between plants and people in the Neotropics are central for the understanding of both forests and human societies. However, in the archaeological literature of the Caribbean, there is no single analysis listing the range of plants used and for what purposes. Upon this situation, we have undergone the task of reviewing the existing paleobotanical literature from a Pan-Caribbean perspective, and assembling a database. It includes each plant identified with details of remain type, use/interpretation, country or island, archaeological site, attributed culture, reported date, calendar years minimum and maximum, and reference. The database was analyzed statistically (taxa most represented), spatially (localities where specific taxa have been identified), and qualitatively (general perspective of the meaning of these assemblages). As the database included both macro and micro remains, the diversity and richness of taxa responds to the variability of human use of different species, their preservation in the archaeological record, and to the recovery methods for each type of remain. The taxonomic richness evidenced in this database illustrates the wide range of plants used in the past and the importance that the forests had to the societies living in the Lowland Neotropics.

Ferone, Troy (US Forest Service-Eastern Region)

[165] *Paying It Forward: Collaborative Heritage Stewardship in the Forest Service's Eastern Region*

The U.S. Forest Service-Eastern Region includes 16 National Forests and one Tallgrass Prairie in 20 states across the Great Lakes, New England, Mid Atlantic, and Midwest. Over 40 percent of the U.S. population lives within the boundaries of the Region. The proximity of these Forests to urban centers, as well as to rural and tribal communities, provides bountiful opportunities for collaboration, partnerships, and volunteer-based heritage stewardship. This short presentation touches on a variety of partner and volunteer-based initiatives led by the Eastern Region's National Forests. In particular, we highlight the creative and exciting initiatives that connect youth, students, veterans, and tribal members with cultural, traditional, and historic properties on National Forest lands. There is no better way to instill a sustainable preservation ethic than to "Pay it Forward" by training the next generation of preservation advocates and professionals.

Ferreira, Teresa [49] see Umbelino, Cláudia

Ferrier, Asa [295] see Haberle, Simon

Ferring, Reid [87] see Coil, Reed

Ferring, Reid and Teona Shelia (Georgian National Museum)

[87] *Technological Variability and Change in the Lithic Assemblages from M5 at Dmanisi, Republic of Georgia*

Recent excavations in the M5 Sector of Dmanisi recovered a series of stratified lithic assemblages dated to the Upper Olduvai subchron (1.85-1.78 Ma) and early Upper Matuyama Chron (1.78-1.76 Ma). These materials from all of Dmanisi's nine major strata provide the most detailed record of lithic acquisition and use from the site. Highly diverse raw materials were acquired and transported to the site from both bedrock and alluvial sources, in contrast to many contemporaneous sites in east Africa, where a high degree of raw material selectivity is frequently reported. The earlier assemblages from Stratum A are dominated by use of alluvial cobbles of tuff, rhyolite, and basalt, and are characterized by quite intensive core reduction, resulting in numerous small flakes and small, exhausted cores. Assemblages from Stratum B indicate shifts in raw material preference, lower degrees of reduction intensity, and production of higher frequencies of retouched tools. Throughout the sequence there is evidence for importation of larger flakes made of high quality material that were produced elsewhere. Overall, these assemblages from Dmanisi provide evidence of technological variability related to occupational intensity, differential raw material preference, and probable functional variability.

Ferrusquía-Villafranca, Ismael [16] see Arroyo-Cabrales, Joaquin

Feseha, Mulugeta [22] see Kappelman, John

Fetterman, Liv (USDA Forest Service) and Rick Anderson (Southern Methodist University)**[208]** *The Heritage Stewardship Enhancement Program and Research Archaeology on the Dakota Prairie Grasslands, U.S. Forest Service*

The ongoing partnership between the Dakota Prairie Grasslands (DPG) and Southern Methodist University, supported by the U.S. Forest Service Region 1 Heritage Stewardship Enhancement (HSE) program, is an investigation of the Paleoindian archaeological record of the Little Missouri National Grasslands. As hoped, this collaboration produced vital information about local Paleoindian prehistory. It has also been fruitful in other ways, including a few tough lessons learned along the way. Liv Fetterman discusses how the HSE program, the partnership, and results of this research provide some solutions to challenges DPG archaeologists face in the midst of an oil and gas boom, while Richard Anderson outlines the benefits of the collaboration for an aspiring archaeologist navigating graduate school. Both also comment on problems encountered through the process of creating and maintaining the partnership, and offer advice for others who may pursue such opportunities.

Fibiger, Linda [25] see Bickle, Penny

Fiedel, Stuart [21] see Morrow, Juliet

Fiedel, Stuart (Louis Berger Group)**[21]** *The Anzick Genome Proves Clovis Is First, After All*

The close relatives who buried the Anzick infant ca. 13,000 cal yr B.P. made classic Clovis tools and were unequivocally the lineal genetic ancestors of all the living Native peoples of southern North America, Central America, and South America. Clovis-derived F11 points track the rapid southward migration of this ancestral population all the way to Tierra del Fuego. Any hypothesized earlier populations—e.g., the seaweed eaters of Monte Verde or the rock-bashers of Pedra Furada—if they (improbably) ever existed, must have been replaced or genetically swamped by these Clovis descendants.

Field, Michael (Leiden University), Jaime Pagán-Jiménez (Leiden University), Menno Hoogland (Leiden University), Jason Laffoon (Leiden University) and Corrine Hofman (Leiden University)**[223]** *What Plants Existed in the Lesser Antilles just Prior to 1492 and Could They Have Been Exploited by the island Inhabitants? - New Data from Archaeological Excavations at Anse Trabaud, Martinique*

The exploitation of plants in the tropical belt by Europeans had a major influence on the distributions of many species. The Lesser Antillean islands received their fair share of new arrivals. But what plant species inhabited the Lesser Antillean islands just prior to 1492? Establishing which plant species occurred immediately before colonial times would increase our understanding of the impact of alien introductions, provide information about biogeographical range changes, and, in addition, indicate the botanical resources available to the pre-colonial inhabitants. Archaeological excavations in a mangrove swamp at Anse Trabaud, Martinique, exposed artefact-bearing sediments that were deposited between A.D. 600 and 1250. These sediments have yielded carpological, palynological, and starch fossils. Preservation of this type is rare in the tropics. Each fossil type allows identification to different taxonomic levels. Carpological remains can often be determined to species level and, on occasion, so can fossil starch grains. This allows a detailed palaeoenvironmental reconstruction of the Anse Trabaud site and biogeographical and archaeological conclusions to be made. Existing archaeobotanical data from the period just before the arrival of Europeans will be reviewed and, in combination with the new data, allow regional scale conclusions to be made.

Field Murray, Wendi (State Historical Society of North Dakota) and Meagan Schoenfelder (State Historical Society of North Dakota)**[265]** *From Folsom to the Fur Trade: Harnessing the Research Potential of the State Historical Society of North Dakota's Archaeology Collections*

The State Historical Society of North Dakota curates collections covering 13,000 years of human history in North Dakota. The development of a more comprehensive archaeology collections program in the last five years has been geared toward increasing public access to these collections and communicating the collections' research potential to an academic audience. The spectacular Lake Ilo Paleoindian collection documents thousands of years of continuous land use in North Dakota. Future research could investigate the northern periphery of Folsom technology, the role of Knife River flint in the northern Plains economy, and other questions relating to Paleoindian adaptations in marginal environments. For researchers interested in the Late Prehistoric and Historic periods, the SHSND curates an entire storage room dedicated to Plains Village collections. Further analysis of these extensive collections will elucidate the establishment and trajectory of ancestral Mandan, Hidatsa, and Arikara farming communities situated along the Missouri River and its tributaries between the thirteenth and eighteenth centuries, and their participation in the nineteenth century fur trade. These collections shed light on lithic technology, craft specialization, social and ritual life, and the versatile subsistence strategies that allowed these communities to become flourishing trade centers in a vast intertribal trade network.

Fields, Shawn and Jamie Arjona (University of Illinois Urbana-Champaign)

[221] *A Chained Melody: Queering Ceramic Industries in 19th Century South Carolina*

During the antebellum period, ceramic industries began to sprout up across South Carolina's agricultural landscape. In the Edgefield district, located near the South Carolina-Georgia border, a number of family-owned kilns contracted enslaved laborers from nearby plantations to mass-produce stoneware for sale throughout the southeast. Innovative alkaline glaze technologies became the foundation for experimental ceramic traditions and styles. A long-held local fascination with these ceramic industries, and their products, captured the attention of art historians, contemporary folk potters, and collectors throughout the course of the last several decades. Much of the scholarship pertaining to these ceramics stems from the imprint of an enslaved African-American potter known as Dave Drake. His inscriptions of poetic verses along with his signature on immense pots were a catalyst for the mythification of Drake during, and after, his life. Drawing from queer theory and recent archaeological findings, we reconsider heteronormative discourses related to Dave's life and art. Specifically, we highlight the ways in which queer intimacies and abject bodies worked to queer these ceramic industries. In doing so, we illustrate how clay intimacies afforded maneuverings in industrial environments laden with oppressive forms of racial domination.

Figueiredo, Camila [263] see Rebellato, Lilian

Figueiredo, Camila**[263]** *Different and Complementary Landscapes: A Case of Study in the Flona-Tapajós*

The goal of this presentation is to contribute to the ongoing debate in Amazonian studies to which human societies impacted and reshaped the landscapes. Landscapes are the results of a human action and environmental changes over time, providing a fundamental dataset for understanding social practices in a historically particular manner (Ingold 1993). Ultimately, this presentation sheds light on the formation and significance of settlement patterns within sites located in the Flona-Tapajós and Santarém region. The paper will present results of a survey conducted in six communities of the Flona-Tapajós in 2014. The majority of the 12 sites mapped contained ceramic fragments typical of the Santarém phase. However, ceramic fragments with Konduri style and from the Borda Incisa Tradition were recovered from sites near the Tapajós River. The presence of indigenous paths connecting the plateau to the riverine region suggests that the archaeological sites located on different landscape types were interconnected. In addition, some sites on the plateau are located in strategic positions, affording great visibility, evidence that point to a defensive function. This presentation contributes to archaeological theory because it attempts to unite landscape approaches to historical ecological perspectives.

[263] *Chair***Figueroa, Alejandro (Southern Methodist University)****[175]** *Mountain Doorways: Caves, Shelters, and Rock Art in Past and Present Southwestern Honduras*

Caves and shelters hold a special place among Mesoamerican cultures. Some of the earliest evidence of human occupation in this region is found inside these natural features, where well-preserved materials attest to the detailed knowledge past populations had of their surrounding landscapes and resources. In later time periods, caves were treated as the portals to the underworld and became an essential part of Mesoamerican ideology. The landscape of the Santa Elena highlands of southwestern Honduras is defined by its numerous shelters and caves, all of which have been used and continue to be used to some degree by its inhabitants. This paper presents the results of a multi-disciplinary research project that demonstrated significant long-term use of sheltered sites in this area, documenting their use as residences, locales for communal gatherings and rituals, and as places of burial. This study and previous work in the area suggest that caves, shelters, and the rock art within have been and continue to be sites charged with meaning and importance for the groups that have visited and inhabited them for the past 10,000 years.

Filini, Agapi (El Colegio de Michoacan)**[46]** *Negative Painted Ceramics in Mesoamerica: Functional Equivalency and Multiple Solutions*

Negative or resist-painted ceramics are present in diverse Mesoamerican ceramic traditions and at different time scales and a millenary functional continuity may be postulated thereof. At the lacustrine region of Michoacán, for example, they were first recorded at the Preclassic El Opeño site (1500 B.C.E.) and manufacturing processes reached a level of technological complexity within the Postclassic Tarascan state. Recent archaeometric studies through SEM/EDX and Raman spectroscopy techniques on sherds of diverse sites in west Mexico revealed technological aspects which have been heretofore poorly understood. Results indicate that potters used several techniques of negative decoration in order to produce highly ritual vessels. Specific questions regarding processes of manufacture, craft specialization, and the use of these vessels are addressed.

Filipovich, Dragan**[88]** *A Simple Fiscal-Demographic Model of the Classic Maya Collapse*

The Classic Maya civilization flourished from approximately 200 A.D. to 800 A.D. in the southern reaches of the Yucatan Peninsula. Population increased throughout the period, accelerating towards the end, finally falling to a small fraction of its former peak level (10 percent or less) in a relatively short span of time (50–100 years). Even though Maya civilization continued in the northern end of Yucatan Peninsula, the holy kings who had been the protagonists of Classic Maya civilization disappeared from the Maya cultural tradition, with their former habitat remaining practically vacant until modern times. In order to explain this 'collapse', I embed a predator-prey model (with an agricultural support population as prey, and a dependent non-agricultural population as predator) within a dynamic model of conflict. With the help of such model it is argued that Classic Maya civilization collapsed because Maya kings could not, under the pressure of warfare, manage (politically) to keep the balance between support and dependent populations upon which the long term sustainability of their kingdoms depended.

Finegold, Andrew (NYU Institute of Fine Arts)**[209]** *Self-Referentiality on Mimbres Painted Bowls*

Drawing on George Kubler's theoretical treatise, *The Shape of Time*, as well as more recent epistemological reflections by art historians such as Georges Didi-Huberman and Alexander Nagel and Christopher Wood, this paper explores the potential for objects to contribute to their own interpretation. The imagery painted on Mimbres vessels often playfully responds to or incorporates their hemispherical shape. There are also instances where the imagery seems to resonate with the holes that were regularly punctured through the bowls' bases at the time of their placement in burials. Rather than "killing" the vessels, this puncturing can be seen as emphasizing their material presence and symbolic value in excess of their functionality as bowls. I will argue that Mimbres artists occasionally chose imagery that, by anticipating this common ritual treatment, highlighted the objects' extension through time while provoking reflection on the nature of the vessels' object-ness and the metaphoric potentials of their perforations.

Finnigan, Patrick (Indiana University South Bend) and James VanderVeen (Indiana University South Bend)**[193]** *Historical and Archaeological Investigation into the "Triangle Land" in South Bend's West Washington District*

All too often, archaeology illuminates the history of "big men." This paper narrates the history through archaeological investigation of one city corner in South Bend, Indiana, and the contribution of the businesses that occupied it in the city's most formative years. Manufacturing successes within South Bend such as the Oliver Plow Works, and Studebaker, are well known and researched. What is less well known are the supporting businesses and businessmen that made up the representative sample of this influential city. This paper illuminates the establishment, growth, and community influence of the businesses it housed, supported by extensive archival research, and recovered artifacts. The humble tinsmith became the proprietor of the area's largest hardware and lumberyards. A German immigrant and his friend established one of the area's largest and longest-running grocery stores that would propel both families into more prosperous circles. Elite families blended interests, forming a neighborhood. The West Washington neighborhood was one of gaslights and trolley cars, nouveau-rich, and the fruits of American industrial expansion in the early 1900s. Contributions from the wealthy helped build opera houses and churches, but it was those of the corner businessmen that formed the heart and soul of South Bend.

Fischer, Anders [214] see Donahue, Randolph

Fish, Gail [92] see Fenn, Mallory

Fisher, Chelsea (University of Michigan)**[27]** *Landscape and Formative Households at Tzacauil and Yaxuná, Yucatán*

A population boom during the Late Formative Period (ca. 250 B.C.E.–250 C.E.) corresponded with the expansion of permanent, aggregated settlements across Mesoamerica. In central Yucatán, Yaxuná was a centralizing focus during the Formative, yet it was not the only place that attracted settlers—so did the nearby, smaller site of Tzacauil. In this dynamic time, what was the relationship between a large center like Yaxuná and its humbler neighbors like Tzacauil? Was Tzacauil an autonomous hamlet, or is it better thought of as a far-flung but culturally integrated segment of Yaxuná? We can approach who these initial permanent settlers were and how they interacted through their houses. Formative houses at both Tzacauil and Yaxuná show patterned preferences for specific landscape features. The influence of bedrock promontories and depressions on initial settlement cannot be understated, as I demonstrate with data from excavations of Formative houses and surface collection. This link between landscape and settlement is not simply one of ecology; rather, it is intrinsic to cultural, economic, and religious patterns that persist for centuries in the northern lowlands. As such, this comparison provides an opportunity for understanding changing relationships between an incipient urban center and its surroundings.

Fishman, Susannah (University of Pennsylvania)**[87]** *In the Orbit of Empires: Ceramics from Urartu to Rome*

Imperial borderlands are drawn into the orbit of their powerful neighbors through a combination of economic interests, cultural affiliations, and martial threat. The site of Oğlanqala, Azerbaijan, has long been positioned at the periphery of empires, making it an excellent case study for dynamics of incorporation and resistance. This research uses ceramic petrography to compare patterns of ceramic production and exchange in the Middle Iron Age (MIA, 800–600 B.C.E.) to the Roman Period (100 B.C.E.–100 C.E.). During the MIA, Oğlanqala lay at the edge of the Urartian Empire. The ceramics from the MIA are primarily local, yet contain a significant proportion of non-local ceramics that indicate wide-spread regional trade. Local and non-local production methods and aesthetics are highly diverse. In contrast, while Oğlanqala was part of Rome's contested periphery, at least half of the ceramics were imported from a single site under Roman control. Moreover, both local and non-local ceramics from the Roman period display a narrow, unified stylistic repertoire. The distinct patterns of economic and stylistic incorporation evident at Oğlanqala during two different regimes, first Urartu and later Rome, demonstrate the diversity and specificity of imperial control.

Fitton, Tom [269] see Fenn, Thomas

Fitzhugh, Ben (University of Washington)**[296]** *Human Ecodynamics of Subarctic Islands of the North Atlantic and North Pacific in Comparative Perspective*

The subarctic islands of the North Atlantic and North Pacific share a number of ecological characteristics, related to common latitudes and similar oceanographic and atmospheric conditions. Both regions were occupied in pre-modern times by subsistence harvesters with varying degrees of dependence on the marine environments for survival, and both areas became incorporated into capitalist, commercial fishing and hunting markets in the past several centuries. We compare the historical ecology of maritime fishing/hunting of these regions and consider the hypothesis that commoditized harvests increased the vulnerability of subsistence communities to environmental perturbations more easily weathered when stocks were less heavily impacted.

[210] *Discussant***Fitzhugh, William****[217]** *Discussant*

Fitzpatrick, Scott [41] see Lawrence, John

Fitzpatrick, Scott (University of Oregon)**[223]** *The Pre-Columbian Exchange: The Anthropogenic Zoogeography of Insular Caribbean Translocations*

The post-Columbian introduction of exotic animals in the West Indies initiated a cascade of ecological changes, resulting in extensive defaunation, reduction, and homogenization of biodiversity, loss of ecosystem services, and extinction of island endemics. Yet, these changes were not without precedent in the Caribbean, one of the world's foremost biodiversity hotspots. Evidence suggests that in the years before 1492, Amerindians in the region

had already profoundly impacted insular ecology, although our understanding of the many aspects of this process varies. For instance, while the archaeological record indicates extensive introductions of South American fauna to the prehistoric Caribbean along with inter-island relocations of endemic animals, the dynamic impacts of these biological invasions remain poorly understood. Taking a diachronic approach, we review the anthropogenic zoogeography and translocation history of exotic species in the insular Caribbean over the last 2,500 years, focusing principally on four wild and domestic mammalian taxa: agouti (*Dasyprocta*), opossum (*Didelphis*), guinea pig (*Cavia porcellus*), and hutia (*Capromyidae*). Drawing on zooarchaeological, isotopic, and genetic data, we contextualize the introduction and insular dispersal of these mammals within the frameworks of historical ecology and human agency, driven by economic, social, and symbolic incentives.

[296] *Discussant*

[160] *Chair*

Fitzsimons, Rodney (Trent University)

[119] *Monuments for the Living, Monuments for the Dead: A Stone-by-Stone Guide to Mycenaean State Formation*

Prior to the appearance of the first palaces at Mycenae in the fifteenth century B.C., the most impressive architectural manifestation of elite authority in the Argolid was not the palace or the house, but rather the tomb, specifically the shaft grave and the tholos tomb. While the funerary data supplied by these burials have long served as the primary means by which the study of Early Mycenaean state formation has been approached, such studies focus almost exclusively on the grave goods themselves, rather than the tombs that housed them. This paper seeks to address this lacuna by applying an energetics approach to the funerary landscape, an approach that posits that the quantity of labour expended upon any particular architectural project correlates with the socio-political complexity of the society that produced it. Since one aspect of socio-political power is defined by differential access to labour resources, the values thus generated serve as quantifiable and easily comparable measures of the power of those groups responsible for their undertaking. This approach injects a new, yet rarely considered dimension to current discussions of "wealth" and "status" and offers new insight into the nature of the socio-political transformations that transpired during the Early Mycenaean Period.

Flad, Rowan (Harvard University)

[106] *Dayatou and Siwashan - Preliminary Report on the 2015 Season of the Tao River Archaeology Project*

In May and June 2015, archaeologists from the Gansu Provincial Institute of Archaeology, Harvard University, Peking University, Yale University, and National Taiwan University, conducted archaeological and geophysical survey at two important sites in the Tao River drainage: Dayatou and Siwashan. Whereas Siwashan is the type site of the Siwa Culture, and has long been known as an important archaeological site, Dayatou has previously not undergone any published systematic research. Furthermore, previous work at Siwashan has not clarified the complicated distribution of material at the site. This recent research lays the foundation for additional focused work, and was also the last fieldwork conducted by Pochan Chen before his untimely death one month later.

[106] *Chair*

Flad, Rowan [180] see Brunson, Katherine

Fladd, Samantha [64] see Barker, Claire

Fladd, Samantha (University of Arizona)

[65] *A Room Remembered: Room Closure through Material Deposition at Homol'ovi I*

Material deposition involves a range of social practices that enact negotiations of identity and interrelationships between people and spaces. Through the deliberate accumulation of artifacts and sediment in certain locations, these negotiations are materialized in the archaeological record. The reciprocal creation and expression of the meaning of spaces and objects can begin to be understood by analyzing the materials deposited in rooms post-occupationally. In this poster, I examine the ways material deposition speaks to the meaning and continued relationships with rooms at the Pueblo IV village of Homol'ovi I. The Homol'ovi Settlement Cluster, located in northeastern Arizona, has been the focus of significant research concerning the range and implications of deposits, particularly in kivas, for the past three decades. Building upon this literature, I investigate three room blocks within the site to understand the social practices involved in the closure of rooms. I pay specific attention to the temporal continuities and discontinuities of depositional assemblages from individual rooms. These patterns should provide insights into the social memories attached to spaces and may speak to the social groups participating in depositional and closure practices at Homol'ovi I.

Fladeboe, Randee (University of Florida)

[239] *Macaw Husbandry in the Ancient Greater Southwest*

The archaeological record of the American southwest and north Mexico contains evidence that for hundreds of years, ancient peoples transported, kept, and possibly bred tropical macaws at several major population centers. Archaeologists are still working to understand exactly how this was accomplished, but the fact that this evidence indicates aspects of macaw husbandry has been underappreciated. Ethological data on human and macaw interactions in similar contexts in the present can help inform the technological practices required of macaw husbandry in the past. Basic interaction sequences of care activities by human keepers are grouped into major "events"—maintenance events, feeding events, etc. This allows assessment of the behavioral properties and capacities of macaws within various interactions and lends insight into past husbandry practices.

[239] *Chair*

Flegenheimer, Nora (CONICET-Área Arqueología y Antropología, Museo de Ciencias Naturales, Necochea), Natalia Mazzia (CONICET, Área Arqueología y Antropología, Museo de) and Celeste Weitzel (CONICET, Área Arqueología y Antropología, Museo de)

[139] *Assessing Fishtail Projectile Point Distribution in the Southern Cone*

This presentation discusses possible causes affecting the distribution of fishtail points in the southern Cone. This distribution is discontinuous, with large territories without diagnostic remains and areas where sites are concentrated. Also, most of the sites with this type of points exhibit few specimens, with remarkable exceptions in Uruguay, the Argentinian Pampa, and Patagonia and southern Chile. We will present thoughts arising from long term research in

a micro region in the Argentinian Pampa. On this ground, the relevance of the following proposals is discussed: 1) sites occupied by early hunter gatherers do not always include materials that are currently diagnostic of early settlers using fishtail points, 2) the practice of depositing broken fishtail points at one place leaves other sites without these diagnostic tools and affects our record of their distribution, 3) certain landscapes and particular resources, such as hills and rocks, were especially attractive for early settlers causing concentrated occupations, 4) some concentrations of sites respond to the history of research and to modern high population areas with good visibility. It is concluded that the discontinuous distribution observed responds both to the behavior of the early occupants and to current research history.

Fleischer, Jeffrey [269] see Fenn, Thomas

Fleming, Arlene (World Bank)

[10] *The World Bank's Approaches To Valuing Cultural Heritage*

The World Bank provides loans, credits, and technical assistance to governments of its client countries. The importance and value of cultural heritage on international, national, and local levels are reflected in the Bank's investment operations as well as in its Operational Policy 4.11—Physical Cultural Resources. Investment for cultural heritage has totaled over four billion U.S. dollars in the past two decades. The Bank's safeguard policy requires that an Environmental Impact Assessment identify cultural heritage that may be impacted by any development project, as well as the stakeholders who assign value to the heritage, and that measures for avoidance or damage mitigation be determined and included in the project's management plan. Archaeology contributes to local, national, and international economic development in numerous respects, a fact that is gaining increasing attention through study and analysis. For years, large-scale multi-year excavations provided seasonal wages to local workers and supported community craft industries, although the revenues were rarely quantified or regarded as local economic development. Archaeological sites, when featured as tourist attractions, can comprise a lucrative source of revenue for their localities, and for provincial and national governments, as well as for foreign private tourism operators. Development institutions, with the intent to alleviate poverty and foster community economic development, have encouraged participation by local inhabitants in maintaining and managing archaeological sites. This emphasis results in efforts to ensure that these populations share in the economic benefits of tourism and requires that such benefits are monitored, recorded, and evaluated. The presentation focuses on several instances where archaeological excavation and site management involve participation by local populations, utilizing their knowledge, cultivating skills, and providing income.

Fleming, Edward (Science Museum of Minnesota)

[58] *From Hero Objects to Foam Blocks: Contextualizing the Archaeological Record in Maya: Hidden Worlds Revealed*

Maya: Hidden Worlds Revealed is a 10,000- to 15,000-square-foot traveling exhibition created through multi-national, multi-institutional partnerships and intended to appeal to museum visitors of all ages. The core of the exhibition is a collection of more than 200 stunning and thought-provoking archaeological artifacts and ethnographic objects from throughout the Maya world. These objects provide visitors opportunities to engage with the authentic Maya past, the Maya today, and the work of dozens of archaeologists. But, equally important, the exhibition also contains hands-on interactive components, immersive environments, large- and small-scale models, and compelling storytelling that, when associated with the objects, help to contextualize both Maya culture and the archaeological process. In this paper, we will explore the development of the exhibition and the methods of display and interpretation used to contextualize the archaeological record of the Maya.

[58] *Chair*

Flemming, Nicholas (National Oceanography Centre UK)

[249] *Discussant*

Fletcher, Roland (University of Sydney)

[138] *Water, Weather and the Fallacy of the Rationalist - Romanticism Dichotomy*

Angkor, in Cambodia, between the seventh and the thirteenth century depended on the largest urban water management infrastructure of the agrarian urban world. The key elements of this infrastructure came into being before the global climate transition of the ninth–tenth century C.E. That infrastructure was vital for coping with the start of the Medieval Warm Phase when other societies around the world experienced severe crises. By the fourteenth century, some parts of Angkor's infrastructure were nearly 500 years old and parts of the network had been modified or gone out of use. When the climate transition to the Little Ice Age began in the thirteenth–fourteenth centuries, the network was hit by repeated extremes of water flow due to mega-monsoons that it was not built to handle. A post-processual/contextualist (Romanticist) viewpoint is essential for trying to understand why the Khmer did what they did. A processual (Rationalist) viewpoint is essential for understanding the outcomes of what they did relative to the circumstances. The theoretical disputes of the previous quarter of century in Archaeology have been a futile misapprehension of the multi-scalar characteristics of cultural evolution.

Flood, John (Department of Anthropology, Indiana University Purdue University Indianapolis), Seth Grooms (Department of Anthropology, University of North Ca), Matthew Pike (Department of Anthropology, Purdue University), Edward Herrmann (Department of Geological Sciences, Indiana University) and Jeremy Wilson (Department of Anthropology, Indiana University Pur)

[111] *Fortifications in the Eastern Woodlands of Pre-Columbian North America: An Examination of Organized Warfare during the Mississippian Period*

The prevalence and ubiquity of warfare have long been recognized by scholars studying the Mississippian Era in the eastern Woodlands. These data point to a culture(s) that often found itself in periods of conflict between competing regional polities, which is reflected in skeletal trauma rates, fortified settlements, and conflagrated villages. Our collective understanding of the geopolitical interactions and causes for this strife is subject to substantial interpretation and debate, rendering the topic suitable for additional exploration. Likewise, archaeologists have infrequently focused on how Mississippian warfare was conducted with relatively unorganized raiding, often invoked as a plausible scenario.

In this study, we examine the protohistoric accounts, ethnographic data on small-scale warfare, geophysical and archaeological data for fortifications, and the prevalence and patterning of warfare-related skeletal trauma to better define the organizational nature of both aggressors and defenders within and around Mississippian period villages. Building upon our research during Indiana University's 2015 NSF REU program at Lawrenz Gun Club (11Cs4), a heavily fortified community in the Illinois Valley, we examine the likelihood that smaller raiding parties could have effectively breached larger palisades with bastions spaced at regular intervals.

Flores, Jodi [10] see McManamon, Francis

Flores, Paola Michel (Benemérita Universidad Autónoma de Puebla)**[136]** *La culpa es de Kirchhoff: Un análisis en torno a Mesoamérica como categoría geohistórica*

El concepto "Mesoamérica" ha fungido como una herramienta útil que permite ordenar el amplio corpus de datos y materiales recuperados con suficiente coherencia y bajo un lenguaje común; no obstante, es posible afirmar que la Mesoamérica que definió Kirchhoff se ha desbordado en múltiples dimensiones, arrastrando consigo problemáticas en torno a la definición territorial, cronológica y conceptual, que varios autores se han esforzado por subsanar. En ese sentido, es conveniente cuestionarse y repensar desde las pautas epistemológicas bajo las cuales nos está guiando, la clase de conocimientos que generan y la manera en que éstos quedan demarcados en un modelo hasta cierto punto rígido. Se propone pues, hacer un análisis crítico que derive en una propuesta distinta, tanto de la demarcación territorial que hasta ahora ha definido subáreas y trazado líneas fronterizas fluctuantes; como de la cronológica que contempla tres grandes períodos dentro de los cuales se insertan las particularidades regionales; esperando suscitar el debate, formular más preguntas y plantear nuevas críticas en torno al concepto bajo el cual se ha desplegado la Arqueología Mexicana.

Flores-Fernandez, Carola (UCSB), Diego Salazar (Universidad de Chile), Laura Olgún (Universidad Católica del Norte, Chile), Gabriel Vargas (Universidad de Chile) and Camila Arenas (Universidad de Chile)**[139]** *Early Coastal Occupations in Taltal, Southern Atacama Desert, Chile*

In this presentation, we will discuss recent results on the historical trajectory of hunter-gatherer-fishers from the coast of Taltal, southern Atacama Desert, Chile. We will focus on the Early Holocene Period (around ca. 11,500–10,000 cal B.P.) which includes several logistical occupations in rock-shelters and an open-air pigment mine. Our research aims to understand geographical and climatic conditions during the early human occupation of the area and its relation to human mobility and subsistence. As the sea level during the Early Holocene was below present coastline, the understanding of human occupation during this time also included the reconstruction of pale-shorelines and underwater surveys to identify currently submerged residential sites.

Flynn, Erin (PAL) and Dianna Doucette (PAL)**[42]** *An Illustrative Case Study for an Archaic House Structure in Southern New England: Insights from the Halls Swamp Site and Beyond*

The Halls Swamp Site represents an Archaic and Woodland Period multi-component Native American occupation in Kingston, Plymouth County, Massachusetts. Excavation of just 2 percent of the Halls Swamp Site yielded over 24,000 artifacts and 78 cultural features, including evidence of an Archaic Period house structure. Archaic Period dwellings have largely gone unnoticed in southern New England due to poor preservation conditions and the ephemeral nature of these features. However, a concentration of post molds, pit features, and fire hearths uncovered at the Halls Swamp Site characterize attributes associated with the few Native American subterranean dwellings reported from Massachusetts and Connecticut, as well as outside of New England. Spatial distribution analysis and radiocarbon data are used to reconstruct the habitation activity at the Halls Swamp Site and contribute to our recognition and understanding of Archaic Period house structures in southern New England.

Foias, Antonia [26] see Moriarty, Matthew

Foias, Antonia (Williams College) and Kitty Emery (Florida Museum of Natural History, University of F)**[291]** *Power and Polity in the Motul de San José Zone: Recent Research at Kantet'u'ul and Chachaklu'um*

Motul de San José dominated a swath of the northern shore of Lake Peten Itza in central Peten, Guatemala, during the Late Classic. Recent excavations at two small sites in the periphery of Motul de San José, Kante't'u'ul (approx. 3km northwest) and Chachacklu'um (approx. 5km east) investigated the relations between these secondary centers and their political overlords at Motul de San José. The divergent cultural histories, settlement patterns, architecture, and material culture of these two minor centers will be compared to reflect on the means of control and strategies of power used by Motul de San José at its apogee during the eighth century A.D.

Folan, William (Univ. Autónoma de Campeche), Joel Gunn (University of North Carolina, Greensboro) and Ma. del Rosario Dominguez (Univ. Autonoma de Campeche)**[179]** *Calakmul, Campeche: Its Comings and Goings in a Market Economy*

This paper covers, in detail, the principal characteristics of Structure II in Calakmul including its architecture, artifacts, and associated activities.

Folan, William J. [179] see Poot, Paulina

Follensbee, Billie (Missouri State University), Allison Robbins (Missouri State University), Sammie Hernandez (Missouri State University), Alexandra Thrower (Missouri State University) and Nicholas Deckard (Missouri State University)**[216]** *Block Busters: What Systematic Replication Studies Reveal about Hypotheses on the Iron Ore Cubes*

Among the most enigmatic artifacts to emerge from Formative Period Gulf Coast deposits are thousands of small, roughly rectangular cubes of iron ore that are perforated in a consistent, t-shaped pattern. Numerous hypotheses have been suggested for the function and meaning of these artifacts, including that they may have served as beads that were strung together as helmet decorations; as objects that were strung together to serve as a sort of armor or mail; as tiny hammers for chipping obsidian; as tokens or as some kind of currency; as an amulet or a charm; as small mirrored pendants; as weights for fishing nets; as caps for bow drills or fire drills; as atlatl weights; as whistles; or as a type of bull-roarer noise maker. Scholars have reached no general consensus, however, on the most sound nor the most probable hypotheses. This presentation will discuss how recent systematic replication studies conducted by my students and I have revealed which of these hypotheses stand up to close scrutiny.

Fonseca Santa Cruz, Javier [198] see Bauer, Brian

Fontes, Lisa (University of New Mexico)**[170]** *Passage through a Palimpsest: Lower Magdalenian Lithic Manufacture and Maintenance Patterns in El Mirón Cave, Cantabria, Spain*

El Mirón cave, a major Upper Paleolithic residential site in Cantabria, Spain, has been the subject of long-term excavations led in part by Lawrence Straus. This presentation focuses on Level 17, a significant Lower Magdalenian deposit excavated in the cave's outer vestibule. Level 17, which is a total of 33 cm thick, was divided into 13 sublevels that were created using correlations made between depth measurements taken during the excavation in each square meter of the 9.5 square meter area. Each sublevel is ~3 cm thick, and allows for heuristic comparisons of spatial changes in activities in the cave. This presentation uses lithic microdebitage to evaluate temporal shifts in Lower Magdalenian lithic manufacture and maintenance areas. These microdebitage, all <1 cm trimming flakes and shatter, were likely compressed in situ during occupations, signaling areas where flintknappers maintained and manufactured lithic artifacts, respectively. Results indicate that during some occupations, manufacture and maintenance were tightly clustered within a single area in the outer vestibule, while during others they were located in distinct zones. These trends may relate to the site being abandoned, reused, and modified as new hunter-gatherer groups entered the site and adjusted its features over the c. 2000 year Lower Magdalenian Period.

[170] Chair

Foor, Thomas [171] see Prentiss, Anna

Ford, Anabel (UCSB)

[71] *Archaeological Commitment to Participation: Discovering the Local to International El Pilar Community*

The El Pilar community is dynamic and includes the most proximal villages, the general communities of Cayo and Peten, the nations of Belize and Guatemala, and from there the greater international community interested in the culture and nature of the tropics. From its first archaeological recognition in the 1980s, El Pilar was destined to play a role in the conservation and development of the Maya forest. Large and imposing, with monuments straddling the political line that separates Belize and Guatemala, there is a complex relationship locally linked and nationally divided, yet integrated in the appreciation and value of the Maya forest and ancient culture. Creating challenges and potentials over the past three decades, work at El Pilar is now a local household word with community outreach through primary schools and village organizations, recognized for a unique brand of tourism that unites traditional Maya farmers and ancient Maya settlement patterns, and for the international exploration of solutions past impacting a path to sustainable conservation and development.

Ford, Ben [90] see Napoleon, Taylor

Ford, Ben (Indiana University of Pennsylvania)

[90] *The Lake Oneida Durham Boat: A Previously Unrecorded Vessel Type*

A shipwreck recently discovered in Lake Oneida, NY, and recorded by a team of professional and amateur archaeologists, appears to be the remains of an early nineteenth-century Durham boat. Durham boats plied the inland waters of the Northeast and Mid-Atlantic during the eighteenth and nineteenth centuries, offering an efficient means to transport bulk cargoes during the pre-canal era. While no archaeological example of a Durham boat has been previously identified, this shipwreck closely matches all available historical descriptions. The size, shape, and layout of the vessel all suggest that this is the first archaeologically reported example of a Durham boat. The details of this find offer important information about early Euro-American trade and commerce.

Forde, Jamie [15] see Dupey, Elodie

Forde, Jamie

[135] *Volcanic Glass and Iron Nails: Shifting Networks of Exchange at Postclassic and Colonial Achiutla, Oaxaca, Mexico*

In this paper, I present data from recent excavations at the highland Mixtec site of Achiutla, Oaxaca, Mexico, to shed light on how indigenous residents there negotiated changes and continuities in exchange relationships from the Postclassic (A.D. 900–1521) to Early Colonial (A.D. 1521–1650) periods. Various lines of evidence demonstrate that Achiutla had significant economic ties to both the Basin of Mexico and the Oaxaca Coast, and that the site was an important locus along trade routes between the two regions. The site may not only have attracted travellers due to its geographic location, but also through its status as a center of prehispanic religious pilgrimage.

Ethnohistorical data indicate that residents of Achiutla acquired significant quantities of goods from the coastal lowlands, while excavations have revealed the presence of a large obsidian workshop there, primarily utilizing material imported from Pachuca. I argue that Achiutla utilized its geographic position and political ties to play an important intermediary role in facilitating highland and lowland exchange. Further, this continued into the Colonial Period despite historical rupture, as data from domestic middens show that natives continued to acquire and manufacture Pachuca obsidian, despite also having access to metal cutting tools introduced by the Spanish.

[135] Chair

Fornaciari, Antonio [147] see Stewart, Marissa

Forton, Maxwell (Binghamton University)

[268] *Petroglyphs of East Tank Mesa and the Mac Stod Great House: Using Rock Art to Gauge Regional Influences in Petrified Forest National Park*

East Tank Mesa is a prominent landform located within the new expansion lands of Petrified Forest National Park: harboring a high concentration of Pueblo II-Pueblo III petroglyph panels and one of the region's few possible Chacoan outliers. This possible outlier is the Mac Stod site: a seven-room pueblo possessing some of the hallmarks of Chacoan architecture (core veneer masonry, large rooms, long straight walls, and well constructed rectangular doorways). The nature of Mac Stod, and whether it truly is a great house outlier, remains unclear though. This uncertainty was addressed through a survey of East Tank Mesa's rock art panels and comparing the depicted elements to panels found throughout the rest of the park and the greater southwest. By understanding what regional influences are represented in the mesa's rock art, we may begin to gauge whether the Mac Stod site was ingrained within locally focused systems of interaction or may represent an expansion of Chacoan influence. Ultimately this project will contribute new data on the rock art within Petrified Forest National Park, enhance our knowledge of one of the park's few possible Chacoan sites, and advance our understanding of this region's relationship with the peoples of the greater southwest.

Foster, Cheryl

[235] *Garden Soils: Assessing the Viability of Soil Phosphate Analysis in the Archaeological Identification of Ancient Maya Kitchen Gardens*

The study of ancient Maya intensive, intra-site agricultural systems has gained new interest in recent years as a valuable way of interpreting numerous aspects of the ancient Maya's daily life. However, ancient kitchen gardens, specifically, are usually difficult to identify by traditional archaeological techniques because of their lack of architectural structures and other identifying features. To compensate for this, Phosphate analyses are being used to positively identify kitchen gardens that are invisible to standard archaeological techniques. The general archaeological community trusts these methods to be a reliable way of testing soils in archaeological sites for specific agricultural features, even though there has been little research conducted to conclusively prove this assertion. In response to this lack of research, this project investigates the viability of Phosphate analysis. This will be determined by a comprehensive literary review of previous and current research and an analysis of the data presented within them. While Phosphate testing has been used to identify general agricultural features, the chemical signatures produced from these methods only give vague information about the soil and what was done to it, making them unreliable to definitively discern a kitchen garden, which was used for specific agricultural purposes.

Fóthi, Erzsébet [147] see Gugora, Ariana

Fouéré, Pierrick [220] see Bonnisent, Dominique

Fowler, William (Vanderbilt University) and Raquel López Rodríguez (Universidad Tecnológica de El Salvador)

[32] *A Thousand Years after the Volcano Erupted: TBJ Deposits and Use at Ciudad Vieja, El Salvador*

The impact of the eruption of Ilopango Volcano in the early sixth century A.D. has been a focus of Payson Sheets' research for more than four decades. The signature of this eruption is the distinctive "tierra blanca joven" (TBJ) layer found at sites in central and western El Salvador. Our excavations in 2013–15 at Ciudad Vieja, the archaeological remains of the Conquest Period town of San Salvador, have allowed us to identify a hitherto unknown site in the distribution of TBJ tephra. In some parts of the site, construction dating to 1528–1545 rests directly on eroded deposits of TBJ that fell about 1,000 years earlier. In other loci, redeposited TBJ was incorporated as part of the construction fill of architectural deposits, and it was an element in the construction of adobe and rammed earth walls. Modern brick makers in the region use TBJ as tempering material for fired clay bricks.

Fowler, Jeremy and Melissa Vogel (Clemson University)

[207] *Geochemical Evidence for Pigment Sources from El Purgatorio, Peru*

Portable X-ray fluorescence was used to analyze raw pigments as well as paints on ceramics and adobes found at El Purgatorio, the capital city of the Casma state. This analysis showed that, in addition to the common red ochre found in the area, cinnabar was also present. This mercurial compound has a distinctive fluorescence and is not common to the area, supporting Casma participation in long distance exchange networks. Further analyses showed manganese present in black paints and calcium in the white paints. Manganese Dioxide has been used in black pigments for millennia. Calcium was present in all of the white paints on ceramics, supporting visual observations that the coastal polity was probably grinding marine shells into temper to make the paste and paints. Pigment and paint production has not been well-studied and this non-destructive analysis has helped to illuminate more about these processes in the Casma state.

Fowles, Severin (Barnard College, Columbia University)

[18] *Discussant*

Fox, Amy (University of Toronto)

[39] *Stone Tools from the Outside: Correlating Object Mass and Shape*

This poster describes a novel high-resolution 3D geometric morphometric outline method that is able to describe object shape in great detail. Elliptical Fourier spherical harmonics—SPHARM—quantifies the shape of an object by producing values for the elliptical Fourier harmonic formula over multiple iterations of the object's surface. This technique is applied to a series of handaxes from Wonderwerk Cave, South Africa, and the data is correlated with the volumetric research of Riddle and Chazan (2014) to ascertain the relationship between handaxe shape and mass within this particular sample. Their radial point distribution (RPD) method uses 3D point-cloud data placed within a digitized 3D handaxe object and calculates the distribution of points within ever-expanding spherical shells based off the object's centroid. Both SPHARM and RPD are size-invariant metrics and as such they are complimentary methodologies. The results of this study demonstrate that different shapes of object can produce comparable mass distributions, an important revelation when studying typology. This poster describes how non-traditional metrics can explore the various ways that humans and objects can interface, and how these ideas are necessary components of a holistic typology.

Fox, Georgia L. [100] see Wells, E. Christian

Fox, Steve, Claire Ebert and Jaime Awe

[237] *ering the Past: Analysis and Interpretation of a Terminal Classic Deposit at the Cahal Pech Terminus Group*

The Terminal Classic (A.D. 750–900/1000) Maya "collapse" remains one of the least understood and most debated aspects in Maya archaeology. One characteristic feature of Terminal Classic contexts in the Belize Valley are large surficial ceramic deposits and are located in the corners of plazas, in front of stairs, and in the doorways of public architecture. These types of terminal deposits have been attributed to numerous activities including termination rituals, feasting events, refuse disposal in middens, or reoccupation by "squatters." We compare the location, composition, and interpretations of terminal deposits excavated at eight Maya sites in the Belize Valley. We use this comparison to analyze the function of a large terminal deposit excavated at the Zopilote Group, a terminus group connected to major Belize Valley polity of Cahal Pech. Based on the presence of ritually significant artifacts recovered from the deposit, as well as the close proximity to monumental architecture containing elite burials, we suggest that the Zopilote terminal deposit functioned as a place of ancestral worship after the site was abandoned. Comparison to ethnohistoric documentation of ritual acts of ancestor remembrance performed by the Lacandon Maya may provide a modern correlate with this archaeological interpretation.

Frachetti, Michael [134] see Hermes, Taylor

Fradkin, Arlene [7] see Rock, Carolyn

Frahm, Ellery [214] see Monnier, Gilliane

Frampton, Sam (Yale University)

[283] *Stringing it Together: An Examination of Shell and Stone Beads at Panquilha*

The presences of different type of artifacts, especially shell and stone beads, have often been used to discuss these inter-regional trade networks. In this paper, I will discuss and try to identify some of these regional networks and the importance of exchange within these local networks. I examine whether elaborate grave goods are displays of wealth or whether they might represent ritual paraphernalia. I discuss the nature of incipient status inequality.

Franchetti, Fernando F. [207] see Otaola, Clara

Franchetti, Fernando, Clara Otaola (IMHICIHU-CONICET Buenos Aires, Argentina) and Miguel Giardina (Natural History Museum of San Rafael, Argentina. I)

[255] *Human Biogeography in the Diamante Valley, (Central Western Argentina): Integrating Different Data in a New Research Design*

The archaeology from the Diamante River Valley, located in Mendoza, Argentina, has been carried out since the beginning of the seventies. The information generated along these years was oriented in several study programs and was motivated by diverse research questions. Different kinds of surveys were done and very few data was published. Most of the archaeological information we have nowadays from this Valley comes from excavations using old techniques, some modern excavations, and from distributional surveys within cultural resource management projects.

The main objective is to improve our knowledge about human biogeography in this ecologically diverse area. We present a random sampling design for the Diamante Valley, where three areas located in the highlands, the piedmont, and the lowlands were selected. The aim is to test differences and variability in the use of the space and resources. In this paper, we will focus on our first challenge of this research program: integrating the background information we compiled from previous archaeological investigations with the methodological approach we developed in our own distributional surveys.

Francisco Curate, Francisco [49] see Umbelino, Cláudia

Franciscus, Robert [181] see Daniel, Chloe

Franco, Nora (CONICET-UBA), Víctor Durán (CONICET - Laboratorio de Paleoecología Humana/UNCu), Valeria Cortegoso (CONICET - Laboratorio de Paleoecología Humana/UNCu) and Gustavo Lucero (Laboratorio de Paleoecología Humana/UNCu)

[139] *Human Ranking of Spaces and the Role of Caches: Case Studies from the South of Patagonia (Argentina)*

Storage of artifacts is a common behavior among hunter-gatherers. Archaeologically, caches have been identified in different places. In this paper, we focus on the discussion of the role of caches recovered in two different environments in southern Patagonia: the southern end of the Deseado Massif and the upper Santa Cruz river basin. In the first case, two caches, attributed to the colonization of this environment have been identified, while in the second case, the cache recovered would correspond to the effective occupation of this area. Cache information is integrated into the known archaeological record of both spaces and the ones located close to them and compared with data on raw material availability. Available paleoenvironmental information, dealing with the existence of arid periods, is also taken into account. This study is framed on GIS least-cost models for human circulation, which are used in order to model and study mobility patterns in heterogeneous landscapes. Information obtained allows us to discuss selection criteria used by hunter-gatherers during different moments of peopling of these environments.

Francozo, Mariana (Leiden University)

[141] *Caribbean Archaeological Collections in European Museums: An Overview*

This presentation will discuss the partial results of the research project "Caribbean Collections at European Museums: Historical Processes and Contemporary Practices," carried out in collaboration with André Delpuech (Musée du quai Branly). The project is part of the ERC-Synergy project NEXUS1492: New World Encounters in a Globalizing World. Although there is a wealth of scientific literature on Caribbean pre-colonial art, so far there is no comprehensive catalogue or inventory of archaeological Caribbean collections in Europe. Therefore, this project aims at identifying such collections and understanding the collecting, spreading, and presentation of Caribbean archaeology in Europe. This presentation will give an overview of such collections located so far in public and private museums in the Netherlands, Belgium, United Kingdom, Germany, Switzerland, Austria, Spain, and Portugal. They include assemblages large and small, from the well-known 'Taíno' historical masterpieces to unknown collections excavated by geologists in the Lesser Antilles counting hundreds of shards and fragments. The aim of this presentation is to provide empirical data from which we can derive broader theoretical questions about the history of archaeology as well as the role of museums in the ownership and conservation of archaeological heritage, in particular in regards to the Caribbean.

[141] *Chair*

Franklin, Jay D. [137] see Shreve, Nathan

Franklin, Jay, Jean-Philippe Rigaud (Bordeaux, France), Jan Simek (University of Tennessee), Lucinda Langston (Bureau of Land Management, Elko, Nevada) and Frédéric Surmely (Ministère de la Culture DRAC Auvergne/SRA)

[278] *A Techno-morphological Analysis of Gravettian Stone Tools from La Grotte Seize and La Ferrassie, Dordogne, France*

The Gravettian cultural sequence has become of greater interest to Paleolithic scholars now that the relationships of previous industries have been sorted out. Our focus here is on Gravettian truncated elements. Morpho-typology suggests that this tool type is a recycled, broken Gravette point. We suggest that truncated elements were deliberately produced tools used as different armatures than Gravette points based on techno-morphological differences. We suggest that truncated elements were part of a predetermined composite tool hunting technology. We examine this idea through a series of morphometric measurements and discriminant analysis.

Frankum, Cheryl (Indiana University of Pennsylvania)

[36] *"How Non-Destructive is XRF: Testing Sample Preparation Techniques for Redware"*

Can XRF accurately detect the chemical composition of ceramics using non-destructive sample preparation techniques? This study looks at the reliability of the Innov-X Delta XRF unit in detecting the chemical composition of earthenware ceramics through three different sample preparation methods. While there are growing interests in using XRF analysis for various ceramic studies, this research question examines whether different testing strategies will produce different results. This experiment studies 16 pieces of redware collected from an eighteenth century site, Historic Hanna's Town near Greensburg, Pennsylvania, by first testing the clean surface of the artifact, then with a slightly abraded surface, and lastly, as pressed pellets. The results will be applied to a larger study of redware from the site with the goal of determining if the redware was locally produced.

Frazier, Mechell (Arizona State University)

[66] *Variations in Connectivity: Mapping Long-distance Interaction in the Prehistoric U.S. Southwest*

Changes documented from the pre-Classic to Classic Period (A.D. 475–1450) suggest that a larger social or political movement was occurring within the Hohokam regional system, but the motives behind this change are poorly understood. To fully understand this phenomenon, it is necessary to examine how the change differed within the Hohokam regional system. Researchers can observe this relationship through the study of what Nelson (2006:345) calls "interaction markers," artifacts, and architectural styles that incorporate a Mesoamerican element (e.g., copper bells, macaws, ballcourts). These markers are present in both the Phoenix and Tucson regions but appear in different proportions, possibly relating to social relationships, the organization of trade networks, or political organization. This research compares the presence of Mesoamerican interaction markers at archaeological sites in the Phoenix and Tucson basins, and estimates the costs of transporting the markers to the respective regions. It is not well understood how interaction and connectivity with other regions, such as north Mexico, changed during this time. Comparing the patterning of interaction markers between the Phoenix and Tucson basins is a useful starting point in understanding the degree of Mesoamerican integration over the Hohokam sequence.

Frederick, Charles [168] see Chavez, Christina

Freedline, Joshua (Brandeis University) and Joanne Baron (University of Pennsylvania)

[88] *La Florida/Namaan: Investigating a Loci of Politico-Economic Influence in the Classic Maya World*

Located on one of the central embankments of El Rio San Pedro Martir, the Classic Maya polity of La Florida (Namaan) is situated between prominent polities of this period (250–909 A.D.). These polities include Piedras Negras, Pomona, and El Peru (Waka), all of which La Florida seems to have had positive trade relations with. During the 2015 field season as part of El Proyecto Arqueológico La Florida, directed by Dr. Joanne Baron, I preliminarily investigated the view sheds between structures along this embankment of the San Pedro. At the summits of five different structures in the 'El Naranjo' central acropolis of La Florida, I was able to view major tracts of land and monuments on the other side of the river. In this presentation, I will use view shed analysis from the tops of structures via arcGIS to portray La Florida as a type of trade loch on El Rio San Pedro Martir. What motivated the residents of La Florida to construct their city in such a manner? Did other polities have economic or political investments at La Florida such that they used this polity as a type of trade checkpoint?

Freeman, Jessica (Seminole Tribe of Florida - Tribal Historic Preservation Office)

[29] *Seminole Cowboys: From Cowkeeper to Today*

Cattle herding is not new to the Seminoles. It is a centuries old way of life that is embedded into their cultural heritage. This tradition began in the 1700s in the Alachua prairies of north Florida under the leader Cowkeeper and has continued into modern day on the Seminole Tribe of Florida (STOF) Reservations. The STOF Tribal Historic Preservation Office (THPO) is currently investigating several early twentieth century sites related to the formation of the Seminole cattle program, including the Charlie Micco Camp, the Morgan Smith Camp, and Marsh Pens. With little archaeological material recovered from these sites, our ability to document them demonstrates how consultation with Tribal members is essential to understanding these sites and their importance.

[29] *Chair*

Freeman, Jessica [29] see Mahoney, Maureen

Freeman, Mark [84] see Dennison, Meagan

Freer-Waters, Rachel [63] see Gearty, Erin

Freidel, David (Washington University in St. Louis)

[138] *Water Mountains and Water Trails: The View from Northwest Peten*

Vernon Scarborough's path-breaking work on lowland Maya water management has focused attention on the way that the Maya conceptualized and utilized landscape and its water sources for political, religious, and economic purposes. Research in northwestern Peten suggests that canoe traffic linked the site of El Achiotal adjacent to the Central Karstic Uplands to the San Pedro Martir River by way of the San Juan River commanded by El Peru-Waka'. The Mirador hill at Waka' was conceived as a water mountain expressing dominion over the surrounding water trails. Control of Waka' and its water trails was contested by regional hegemony during the Classic Period. We review the evidence.

[59] *Discussant*

[26] *Chair*

Freiwald, Carolyn [86] see Patterson, Erin

Freiwald, Carolyn (University of Mississippi) and Timothy Pugh (Queens College-CUNY)

[100] *Strontium Isotope Values for Early Colonial Cows at San Bernabe, A Spanish Mission in the Peten Lakes Region of Guatemala*

The earliest Spanish explorers in the fifteenth century brought ships stocked with European domesticated animals. Yet for nearly two centuries, the Maya living in Guatemala's Peten Lakes region continued to rely on traditional wild animal species. A small number of cow and horse bones have been identified in Contact Period contexts at Zacpeten and Tayasal, but significant changes in animal use are only visible after the Spanish began to build missions in the region during the early 1700s. We explore the introduction of cows, pigs, and horses to the region at the San Bernabe mission near Tayasal. Strontium isotope values provide information on where these animals were acquired, and zooarchaeological analysis provides information on animal rearing and butchery practices, as well as access to the new species by different groups residing at the site. Examination of the San Bernabe faunal assemblage shows a continued reliance on lacustrine resources such as turtles and snails, though other data suggest a marked change in diet. We examine the potential impact of this new lifestyle on land use, farming, and even the health of the regional population.

French, Katherine (New York University)

[161] *A Multiscalar Approach to Medieval Animal Remains: From Bone Microstructure to Multiregional Trends*

Variability is a defining characteristic of early medieval pagan mortuary practice. Groups may have buried individual decedents in myriad ways, all falling under the definition of 'pagan.' When the variability of a specific ritual practice is compared at the community rather than individual level, however, then local and regional trends emerge. One such ritual practice is the incorporation of animals into human cremations—a practice common in terminal Iron Age and early medieval mortuary contexts across northwestern Europe. This paper examines the prevalence of animal deposits in Early Saxon (450–650 A.D.) cremations, and suggests that “communities of ritual practice” who cremated and buried their dead in this manner can be identified on multiple scales, from the intracemetery to the interregional. Previous studies demonstrated the likelihood of these communities, although geographically limited to East Anglia, Lincolnshire, and Yorkshire. Using advanced cremation analysis techniques, in particular histological methods developed for the identification of small bone fragments, new data suggest that approximately one in five burials contained commingled animal remains in Early Saxon cremation cemeteries across England, suggesting highly structured communities of ritual practice. Future research will expand beyond Britain to identify related “communities of ritual practice” on a broader scale.

French, Kirk (Pennsylvania State University)

[162] *The Flow of Knowledge: Ancient Water Systems and Mentorscapes*

From his initial doctoral work at Cerros in the late 1970s to his most recent investigations in Tikal, Vernon Scarborough's research goals have consistently used water control as an instrument to better understand social complexity. His research has spanned a period of our own history when more sustainable approaches to growth are desperately needed as access to water is of an ever increasing concern. As his student, now colleague, this paper will highlight how Vernon Scarborough and his work has shaped and influenced my own research into water management and sustainability at Palenque, Tikal, and the Teotihuacan Valley.

[250] *Discussant*

French, Kirk [235] see Hermitt, Elijah

Freund, Kyle (Indian River State College), Craig Alexander (University of Cambridge), Robert Tykot (University of South Florida), Keri Brown (University of Manchester) and Italo Muntoni (Soprintendenza Archeologia della Puglia)

[146] *A Network-based Approach to the Study of Neolithic Pottery Production in the Tavoliere (Apulia, Italy)*

The Tavoliere has one of the densest concentrations of Neolithic settlement in Europe and is known for its wide repertoire of pottery styles. Using network analysis techniques, this study explores Neolithic pottery production in the region by integrating typological analysis with petrography and elemental characterization using portable X-ray fluorescence (pXRF) spectrometry. In doing so, we reveal sets of choices made at multiple stages of the production processes and in turn shed light on the cultural and socio-economic relationships that underpinned these communities of practice.

During the summers of 2013–2015, our team systematically surveyed 28 sites for cultural resources, which included the collection of ceramic and lithic finds from the surfaces of known Neolithic sites. We also collected 75 geological clay samples from major river valleys throughout the Tavoliere to distinguish possible sources of ancient raw materials.

Using these data, network analysis was undertaken to identify the strengths of inter-site relationships based on comparisons of the relative proportions of ware types and their corresponding geological sources. The results indicate that raw material procurement is patterned in different ways when compared with the distribution of ware types. Moreover, there are distinct differences in the distribution of the major ware types across space.

Friedel, Rebecca

[270] *Ancient Maya Plant Use In the Mopan River Valley, Belize*

The Mopan River Valley was home to a number of prehispanic Maya polities, including both political centers and rural communities. The forests and plant products grown in the region played crucial roles in the lifeways of these Maya, providing food, fuel, construction materials, and medicine. This paper presents preliminary results from the analysis of macrobotanical remains recovered through flotation by the Mopan Valley Archaeological Project and Mopan Valley Preclassic Project. These plant remains come from both monumental centers like Xunantunich and Buenavista del Cayo, and rural settlements like San Lorenzo. They derive from a variety of archaeological contexts, including commoner and elite residences and public ritual areas. Temporally, the samples span various important transformations in the valley's social history including the development of complexity during the Preclassic Period, the political florescence during the Late Classic Period, and the collapse of divine kingship associated with a large-scale depopulation of the area in the Terminal Classic Period. The results will be discussed in terms of what they reveal about elite and commoner lifeways and broader sociopolitical dynamics.

Friedl, Alex [6] see Sherwood, Sarah

Friel, Robert [210] see Bond, Julie

Froese, Tom (Universidad Nacional Autónoma de México) and Linda Manzanilla (Universidad Nacional Autónoma de México)

[129] *A Network Theoretical Analysis of the Emergence of Co-Rulership in Ancient Teotihuacan, Central Mexico*

The political organization of Teotihuacan continues to be unknown. While some researchers see evidence for a powerful centralized hierarchy, others argue for a more collective form of government. We created an abstract computer model of hypothetical social relations among neighborhood-level representatives to show that such a distributed political network could in principle have been sufficient for globally optimal decision making, as long as there are community rituals and sections of the city that are not too independent (Froese, Gershenson and Manzanilla 2014). These conditions were most likely satisfied during the early periods of the city. However, there is evidence that during the final stages, some neighborhood centers become more isolated and independent, and the city as a whole became organized into four districts. Our model suggests that such social fractioning would have undermined a purely horizontally organized collective government. But Manzanilla has hypothesized that four co-rulers governed the city at the district level during this period. We therefore introduced this hierarchical level into our model to verify if such a mixed organization could have addressed some of the issues associated with a fractioning of the underlying social system. We discuss our modeling results in the context of archeological evidence.

Fruhlinger, Jake (Idaho National Guard)

[73] *Moderator*

Fulkerson, Tiffany (Washington State University)

[39] *Engendering the Archaeological Record of the Southern Plateau, Northwestern North America*

Within the last 30 years, researchers have made considerable advances in the effort to engender the archaeological record in areas of northwestern North America. Despite these developments, archaeological considerations of gender in the southern Plateau remain markedly sparse; rather, studies in the region tend to focus on human-environmental interactions and subsistence, settlement, and technological systems. This study aims to address the relative scarcity of explicit and systematic approaches to archaeological inquiries into gender in the Pre-Contact Period of the southern Plateau and, specifically, approaches which center on women. Studies addressing gender and sex in the archaeological record of the Plateau, Great Basin, and Northwest Coast are reviewed in order to assess current theoretical and methodological frameworks that have been published in peer-reviewed and gray literature. Ethnographic records are reviewed in order to identify female-based activities and the material objects, features, and spatial organizations that are associated with these behaviors. For example, digging sticks/digging stick handles, basketry/matting/woven textiles, needles, ground stone tools, menstrual hut features and camas ovens, and macro-and micro-botanical remains offer potential avenues for exploring issues of gender identity and divisions of labor in the southern Plateau.

Fuller, Dorian Q [106] see Qin, Ling

Fulton, Albert and Catherine Yansa (Michigan State University)

[90] *Historic Native American Impacts on a Temperate Forested Ecosystem, Northeastern U.S.A.*

We quantified the nature and extent of Haudenosaunee (Iroquois) disturbance on the forests of the Finger Lakes region, west-central New York, U.S.A., through multivariate statistical analysis of witness trees and survey line vegetation descriptions derived from original late eighteenth century C.E. land survey records and historical documentation in conjunction with archaeological site distributions analyzed in a geographic information system (GIS). Detrended correspondence analysis (DCA) ordinated the regional vegetation along a primary successional gradient associated with proximity to Haudenosaunee agricultural settlements. Furthermore, logistic regression indicated that proximity to aboriginal settlements was the most statistically significant predictor for the distribution of mast, early-successional, and disturbance-related taxa in the pre-Euro-American settlement forests among a variety of climatic and topographic predictors. We hypothesize that sustained anthropogenic vegetation disturbance—primarily in the form of forest clearance, vegetation burning, and selective mast tree cultivation—during and prior to the Historic Period (1600–1800 C.E.) was responsible for the conversion of a portion of the Finger Lakes region's late-successional forests into distinct successional communities associated with agricultural and silvicultural subsistence activities.

Fulton, Kara (University of South Florida)

[120] *Geochemical Analysis of Maya Commoner Houses and the Spaces in between at Actuncan, Belize*

This research considers commoner activity patterns by investigating the results of a geochemical analysis of 500+ samples from earthen surfaces at Actuncan, a prehispanic Maya city located in western Belize. Samples derive from Terminal Classic surfaces of commoner houses as well as the open spaces surrounding them. Archaeological research has often focused on areas that contain visible architecture, since those regions are most easily recognizable as places that contained ancient activity, while neglecting the open spaces between. When ancient use of open spaces is considered, most researchers have focused their investigative efforts towards the exploration of formalized patios and plazas. However, less effort has been devoted to non-formalized space, such as the areas between residences, particularly open areas surrounding commoner houses. With the advent of modern methods, such as soil chemical residue analysis, these open spaces can be investigated in new ways in an attempt to explore how ancient people used architecture-free zones in comparison to architectural areas. Results of this research show that residents of the sample area actively engaged with not only architecturally defined spaces, but also with the interstitial spaces in between. Further, activities conducted in these spaces appear to have been distinct.

Fulton, Kara A. [125] see LeCount, Lisa

Funk, Caroline [124] see Taivalkoski, Ariel

Fusco, Ugo [80] see Moses, Victoria

Fyfe, Ralph [218] see Griffiths, Seren

Gadison, Davette (Tulane University), Brittany Hundman (Georgia State University), Dan Jones (Georgia State University) and Nicola Sharratt (Georgia State University)

[219] *Late Intermediate Period (A.D. 1250-1470) Mortuary Practices at Tumilaca La Chimba: Spatial and Temporal Mortuary Variation in the Moquegua Valley, Peru*

In this paper, we present recent fieldwork focused on Estuquiña mortuary contexts at the site of Tumilaca La Chimba in the Moquegua Valley of Peru. Estuquiña is the local expression of the Late Intermediate Period, and conventionally dated to approximately A.D. 1250–1470. In summer 2015, a total of eight intact circular below ground tombs were excavated at the site. This represents the largest sample of intact Estuquiña burials excavated since fieldwork was conducted by Programa Contisuyo members at the type site of Estuquiña in the 1980s. We discuss tomb construction, as well as the deposition and special distribution of cultural materials and human skeletal remains within the burials, and examine the considerable variation between the excavated tombs, particularly in terms of the treatment of human remains before and during burial. We also compare these new data with pre-existing data on mortuary practices in an earlier occupation at Tumilaca la Chimba, as well as with the literature on funerary contexts at the site of Estuquiña, to examine local variations in funerary patterns across space and time during the Late Intermediate Period.

Gadsby, David

[191] *Using Site Condition Data to Manage Heritage Sites for Climate Change Impacts*

Heritage sites worldwide are threatened by human action and inaction; archaeologists are observers of the era of human-induced global change. We are specially positioned to use our data to examine such change through the material record. Additionally, archaeologists have been recording observations about the condition of sites for many years, even if those observations are not always intended to monitor site condition or integrity. Archaeologists in the National Park Service have, in maintaining the Archeological Sites Management Information System (ASMIS), inadvertently left a record of climate change observations.

As heritage stewards, we must learn to manage sites in the face of continuous changes that we do not fully understand. Recently emerged technologies—including those designed to manipulate increasingly comprehensive and accurate geospatial data—allow archaeologists to examine our data in new ways to understand the causes, directions, and ongoing dynamics of climate change impacts. Our recent study of site condition data from several U.S. National Parks allows us to examine those impacts on National Park Service sites and provide recommendations for future study. We consider how park planners and managers might use these data to prioritize and preserve cultural resources in the face of rising sea levels.

[191] *Chair*

Gadus, Eloise (Prewitt and Associates, Inc.)

[292] *Luminescence Dating of Prehistoric Ceramic Vessel Sherds from the North Central Hills of Mississippi*

Data recovery investigations at site 22CH698, located in Choctaw County, Mississippi, employed luminescence dating of ceramic vessel sherds to complement radiocarbon dates and establish cultural stratigraphy within the site's thick Holocene alluvium. The dating results, along with diagnostic artifacts, indicate that the site components, representing some 2,000 years of occupation, are mixed. Yet the luminescence dates underscore a strong Miller I through Miller III phase occupation (ca. 100 B.C. to A.D. 1100) and demonstrate consistency with dating of the ceramic sequence from the Tombigbee drainage to the east. These results bode well for using luminescence dates to adjust southeastern chronologies.

Gaffney, Vincent [223] see Allaby, Robin

Gaggio, Giacomo (University of California, San Diego.) and Paul Goldstein (University of California, San Diego.)

[122] *Food for the Ayllus: Plants Access and Social Meaning in the lowland Tiwanaku Sites of Omo and Rio Muerto*

Tiwanaku, one of the first Andean states, spread during the Middle Horizon (A.D. 500–1000) from the Bolivian Altiplano into the lowland territories of Cochabamba and Moquegua in order to acquire the resources that were lacking in the highlands, a strategy termed by Murra as the "vertical archipelago." Plants such as maize and coca were among the primary resources that the Tiwanaku sought in these valleys, and different social groups, ayllus or elites, were probably in charge of accessing and redistributing them, as suggested by archaeobotanical research on Tiwanaku domestic contexts (Wright et al. 2003). In this paper, we test this hypothesis with a paleoethnobotanical analysis of Tiwanaku household contexts from the sites of Omo and Rio Muerto, located in the Moquegua Valley. The Moquegua Valley presented a large Tiwanaku occupation from A.D. 600 to A.D. 1000 ca. Two main ceramic styles, representing different Tiwanaku social groups, termed Omo and Chen Chen, have been identified by Goldstein (2005). Our objective in this paper is to assess differences in food access, consumption, and processing between the two groups of colonists through the analysis of the presence and distribution of food plants in the domestic contexts of the Omo and Rio Muerto sites.

Gagnon, Celeste (Wagner College) and Bethany Turner (Georgia State University)

[45] *Those Who Came Before: Investigating Diet, Health and Mobility in the Moche Valley, 1800 B.C –A.D. 200*

Much sweat and ink has been shed investigating the Moche of north coastal Peru. But what of those who came before? In order to understand the Moche world, we must explore their history. To address this issue, the skeletal remains of over 850 individuals who lived in the Moche Valley during the Gualaquiza, Salinar, or Gallinazo phases were examined. The collected bioarchaeological data including demographic patterns, oral health indicators, light and heavy isotopes, and pathological conditions allow us to investigate the lived experience of these Moche ancestors. Bioarchaeological evidence of individuals lives are integrated within phases and used to examine population-level phenomena. What we find are indications of the development of a regional political economy, changing patterns of population movement, and varying levels of stress. These patterns shed light on people's daily experience of archaeologically identified changing settlement patterns and growth of agricultural infrastructure.

Gakii, Mercy [13] see Ambrose, Stanley

Gakuhari, Takashi [147] see Karsten, Jordan

Gal, Robert [217] see DeAngelo, Rebekah

Galaty, Michael [166] see Parkinson, William

Galaty, Michael (Mississippi State University)

[166] *Collective Memory and the Mycenaeans: The Argolid, Messenia, and the Mani Compared*

The concept of collective memory has received some attention in archaeology, but has not been systematically applied to processes of state formation and sociopolitical change. In this paper, I model the evolution of collective memory systems in Greece from the Neolithic to Iron Age, with a focus on Mycenaean regions. The Argolid, Messenia, and the Mani—using The Diros Project's excavations of a Mycenaean "ossuary" at Ksagounaki as a primary example—vary in terms of how collective memories were created and put to use, as reflected in long-term differences in mortuary practice. A collective memory model can also be employed to help explain differences in Mycenaean versus Minoan state formation.

Gale, Sara, Shawn Patch (New South Associates, Inc.) and Sarah Lowry (New South Associates, Inc.)

[8] *Double Palisades and Double Frequencies: Comparing Single-Channel and Dual-Channel Ground Penetrating RADAR data from Hiwassee Island*

The vast majority of Ground Penetrating RADAR (GPR) surveys have used one ultra-wide band frequency range when examining sites. With this choice come assumptions of the maximum depth and size of potential features as there is always a trade-off in GPR between depth range and maximum resolution. A multi-component site or one with extended occupation may warrant surveys with different GPR antennas in order to reach the earlier occupations and still resolve small features, such as post molds. However, the use of multiple antennas will typically double the survey time. A 2015 survey of Hiwassee Island (40MG31) in the Tennessee River afforded an opportunity to directly compare results from a single-channel, 400 MHz antenna, and dual-channel system, which combines an 800 MHz and 300 MHz into one antenna. Results from this survey show the impact a dual channel system can make when interpreting features of varying sizes and depths while still being budget conscious.

Galke, Laura (George Washington Foundation)

[293] *Is Colonoware an Emblem of Enslavement?*

During the antebellum period the town of Manassas, Virginia, was composed of free whites, and both free and enslaved black people. In this small community material culture played a crucial role in broadcasting status amongst its anxious constituents. They lived in an atmosphere where "whiteness" connoted cleanliness, order, freedom, and privilege. An individual's proximity to, or distance from, whiteness yielded either powerful benefits or humiliating consequences. This was a community in which colonoware pronounced status over ethnicity. Decades of archaeological investigations under the direction of the National Park Service, National Capital Region, have yielded material culture from a variety of antebellum-era domestic sites whose assemblages indicate that the dominant ideology considered colonoware an emblem of enslavement.

Gallaga, Emiliano (EAHNM, University of Arizona), victor ortega (EAHNM) and Tobias García (EAHNM)

[78] *The Petroglyphs of Janos, Chihuahua and its Archaic Community*

In this paper, we will present the preliminary results of the first field season of the El Peñón del Diablo, Janos, Chihuahua Project, focused on an interesting rock art site on the chihuahuan prairie. We like to emphasize that this archaeological project was created under the Janos community initiative, which wanted to know more about the site for its protection and for tourist development in the area. Thanks to the close collaboration between the Janos municipality, the Centro INAH Chihuahua, and the EAHNM, we were able to register the more than 45 petroglyphs sets located on the crag, as well as the surface material collection from the immediate site area (250 x 150 mts). In a first assessment, the rock art site seems to be a single and isolated feature on the valley, but the finding of more than 25 stone ovens, several basin metates, more than 120 stone mortars, and a considerable amount of lithic material, indicate a long occupation that possibly started around the late Paleoindian/early Archaic Period.

[78] *Chair*

Gallaga, Emiliano [179] see Melgar, Emiliano

Gallant, Thomas (University of California, San Diego)

[271] *Landscape Archaeology, Watermills and Hydrotechnology on a Greek Island*

A striking feature of the Greek island of Andros's human landscape is the extremely large number of watermills that operated on the island in the recent past. By one estimate, there were on the island, whose territory is only 380 sq km, more than 270 watermills in operation during the last century. Today, there are none and not a single ravine on the island has sufficient water flow to power even a single mill. To reconstruct the social, economic, and environmental history of mills on the island, we studied one ravine, Fousiai. First, we conducted an intensive pedestrian survey of the ravine and identified 29 water mills. Next, we selected three for more detailed examination, including selective excavation. During the survey, we discovered that an elaborate system of rock-cut channels had been incised into the walls of the ravine in order to channel water to the various mills. Using detailed satellite imaging, we reconstruct the hydrotechnological system in the ravine. The last two sections of the paper focus on, first, the question of climate change and when the island ceased to receive sufficient water to power the mills and, second, the economic history of the mills.

Gallardo, Francisco [57] see Correa Gurrulat, Itaci

Gallareta, Tomas [26] see Gallareta Negron, Tomas

Gallareta Cervera, Tomás (University of North Carolina at Chapel Hill)

[127] *A Model for Interpreting the Royal Court Puuc Tradition*

Throughout 16 years of research at the archaeological site of Kiuc, located in the Puuc zone of the Yucatán Peninsula, explorations have yielded the complete construction sequence of its Late Classic Period royal court and central architectural group, Yaxché. Deep and detailed excavations at the group's central building, Str. N1065E1025, have produced a unique picture of the evolution of architecture, modification of the landscape, and its role in the consolidation of royal power through the use of ritual, domestic, and administration spaces. Moreover, evidence of royal behavior, and the dynamics of the royal court institution at Kiuc suggest a local tradition of highly specialized architecture and ceramic wares which can be seen at large Classic Period Puuc sites such as Uxmal and Labna. In this paper, I use data from detailed stratigraphic analysis, AMS dated contexts, architectural reconstruction, and midden analysis to generate a Royal Court Model to interpret the continuities and transformations of Puuc elite behavior during the Late and Terminal Classic periods.

Gallareta Negron, Tomas (INAH), Tomas Gallareta, William Ringle and Bey George

[26] *Economic Strategies in the Puuc Hills of Yucatan*

Some theorists of the ancient Maya economy argue that the movement of goods served to materialize and aid in the performance of what were essentially political relations of power. Such a perspective emphasizes the rigidity and extreme hierarchy of exchange networks, and their essential focus on the ruler's body and his court. Proponents of market exchange, in contrast, see exchange as serving more quotidian processes of supply and demand, and only tangentially political forces. The Puuc Hills of Yucatan provide an interesting test of these positions, as on the one hand many small sites built extensive palaces suggestive of an elaborate court life. On the other, Puuc society had an extremely broad base of wealthy individuals but relatively little investment in ritual architecture. Imports seem to have been modest. This paper suggests that the particular demands of the karstic landscape fostered the active participation of sub-royal elites in the Puuc domestic economy in ways distinct from the extremes of market and ritual exchange.

Gallareta Negron, Tomas [127] see Kohut, Betsy

Gallareta Negrón, Tomás [127] see Parker, Evan

Galle, Jillian [7] see Bates, Lynsey

Galle, Jillian (The Digital Archaeological Archive of Comparative Slavery, Monticello)

[272] *Chitons and Clams, Cash and Carry: An Archaeological Exploration of the Impact of Enslaved Children's Foraging Strategies on 18th-Century Enslaved Households in Jamaica*

Attempts at understanding the economic and social strategies used by enslaved people in the early modern Atlantic World require sophisticated models of human interaction, models that allow archaeologists to precisely investigate the complex behavioral strategies that underlie artifact patterns. Here, Optimal Foraging Theory provides the framework for identifying the fishing and foraging activities of enslaved children and adults laboring at the Stewart Castle Estate, an eighteenth-century Jamaican sugar plantation. Data from the estate's slave village suggests that a growing reliance on the products of children's labor, in this case low-ranked shellfish, allowed enslaved households to divert high-ranked fish species to the marketplace, where the proceeds from the sale of these high-ranked fish were used to acquire costly, imported goods. Signaling Theory then provides a framework for understanding the relationship between the discard of fauna remains, shellfish, and non-provisioned costly goods within the village, patterns that suggest how and why enslaved households transformed precious labor and food into consumer goods purchased at local and regional markets.

Gallego, Jose Ramon [20] see Casar, Isabel

Gallenstein, Gwenn [63] see Gearty, Erin

Gallivan, Martin (William & Mary) and Jeffrey Hantman (University of Virginia)

[284] *Pilgrimage, Ancestors, and Commemoration in Postcolonial Indigenous Homelands*

In this paper, we consider ritual practices at indigenous places in the Chesapeake that are traditionally described as 'abandoned.' Our study involves four sites in Virginia regarded as sacred by past and contemporary Monacan and Powhatan people. From a strictly non-indigenous perspective each of these places has been viewed as abandoned at or just past the moment of European colonization. Instead, we find evidence that these locations remained active as part of indigenous homelands. The archaeological and ethnohistorical records provide evidence of periodic journeys to towns, mounds, and burial grounds after the residential population had departed. Our research situates us in an ongoing discussion of pilgrimage rituals inferred at precontact centers in North America such as Cahokia and Chaco Canyon. However, monumentality, large gatherings, feasts, and social transformations (communitas) are not apparent in our studies. Instead, we posit that the rituals observed in the Chesapeake are part of postcolonial commemorations of ancestors, homeland, and continuity. This process of postcolonial commemoration within precolonial places has implications for contemporary indigenous connections to ancestors and ancestral homelands.

Galvan, Melissa (Universidad de las Americas) and Betsy Kohut (Millsaps College)

[127] *Acknowledging Anonymous Artists: Examining the Painted Stucco Facade from a Temple at Kiuc, Yucatan*

Excavations in the main plaza of Kiuc in Yucatan, Mexico, revealed the presence of a dismantled stucco façade south of the temple it once adorned. The façade dates to the temple's initial Late Classic construction (600–800 A.D.) and is thought to have been stripped from it during a second construction phase in the Terminal Classic (800–1000 A.D.). Preliminary analysis of the deposit provided insight into the methods used to sculpt the stucco revealing its theme to have been a historic-narrative depicting important characters, a style similar to those found at other Classic lowland Maya sites. To understand the process by which such stucco facades were created, we will conduct analysis of the raw materials and artistic/architectural techniques

used in their production. In this paper, we present the results of chemical analyses used to identify the materials (stucco plasters and pigments) used in the construction. Identification of these materials and the techniques by which they were combined enables us to address questions regarding their availability and selection by the artists operating at Kiuc during this time. The specifics of this artistic tradition with regard to level of specialization and resource investment can be compared to others in ancient Mesoamerica.

Gamble, Lynn (University of California, Santa Barbara)

[110] *Feasting, Ritual Practices, and Persistent Places: New Interpretations of Shellmounds in Southern California*

Intensive archaeological investigations at the largest extant shell mound in the Santa Barbara Channel area and one of the best-preserved Early Period archaeological sites in the region have produced an array of radiocarbon dates within solid stratigraphic contexts. Approximately 50 house depressions situated in rows on several terraces have been mapped on the eight meter high mound that measures 270 by 210 meters, approximately 5 hectares. Analysis of multiple lines of evidence, including stratigraphic profiles of multiple house depressions and features, 76 radiocarbon dates, ground penetrating radar, and mortuary analyses of over 200 previously excavated burials, support my claim that the mound, El Montón, was a persistent place where early visitors feasted on red abalone, urchins, sea mammals, and other marine delicacies, constructed dwellings, buried their dead, and performed ceremonies where select groups of infants, children, and adults were revered. These mortuary rites conveyed the symbolic power of the place and created a history of events that became part of a mythical and real past that was repeatedly visited, modified, and interpreted as social relationships were reinforced. This case study supports the idea of southeastern archaeologists and others that shellmounds are socially constructed landscapes, not just accumulations of refuse.

Gamble, Julia (University of Toronto) and Brooke Milne (University of Manitoba)

[214] *Explorations in LEXT Image and Profile Capture for Dental Enamel Surface Morphology*

The field of bioarchaeology is leading to significant advances in our understanding of the lives of past populations. A particular area of interest in this field lies in the consideration of the early life determinants of later life conditions. The consideration of non-specific skeletal stress markers has been at the forefront of this research. Dental enamel grows incrementally, and because it does not remodel once formed, a permanent record of growth disruption is preserved. Traditionally, enamel surface defects have been observed macroscopically. However, this method does not capture the smaller defects reflecting a disruption in only a few of the growth lines visible on the tooth surface. Previously, SEM has been used to examine these patterns, but this only provides an image of the tooth surface which then needs to be scored through visual examination. Other techniques for trying to produce profile lines for more objective assessment have been explored, such as the use of an engineering measuring microscope and the Alicona 3D InfiniteFocus imaging microscope. This paper presents the preliminary application of the LEXT 3D laser measuring microscope to examine dental enamel. The benefits of the LEXT will be discussed along with the challenges encountered in this examination.

Gamble, Joseph [230] see Pohl, Mary

Gangloff, Deborah

[48] *Discussant*

Gantos, Alex [221] see Harrison-Buck, Eleanor

Gao, Xiaofang [180] see Zhang, Qun

Gao, Qian (University of Barcelona)

[254] *Archaeological Tourism and Social Values, a Case Study in China*

Today the increasing commercialization of cultural heritage draws archaeology and tourism into ever-closer contact. With the fast development of tourism, archaeological sites are utilized for their multiple potentials as revenue generators, public education providers, national identity promoters, and many other roles. It should be noted that these potentials are defined by the various values that a society attributes to its archaeological heritage. That is to say the values of archaeological heritage, once considered to be intrinsic, are now believed to be produced out of the interaction between the heritage itself and its historical, social, and economic contexts. The social values of archaeological sites, firstly recognized in the Burra Charter of 1979, have become increasingly emphasized in legislation and guidelines for the management of archaeological sites at a global level. In China, the social values of archaeological sites are also progressively recognized in recent years. However, there is rarely a full account of the impact of tourism on a society's perception of such values. This paper employs ethnographic approaches to scrutinize the social values attributed by local communities to archaeological sites in China under the influence of tourism development, using the Daming Palace archaeological site as a case study.

Garay, Jose and Isabel Rivera-Collazo (University of Puerto Rico, Río Piedras campus)

[156] *Subsistence and the Resilience of Coastal Habitats in the Longue Durée*

Mollusks recovered from archaeological sites reflect decisions made by individuals in the past, changes in the environment through time, and the interactions between people and landscapes. Therefore, archaeomalacological analyses can help to reconstruct paleoenvironments and to identify changes in consumption practices. Changes should be particularly evident when considered from a deep-time perspective. In this presentation, we will be evaluating samples from three archaeological sites spanning from 4.4kBP to the nineteenth century A.D. within the same hydrological basin (Rio Grande de Manati, Puerto Rico) with the intention of examining culture and environmental change through time. The research question guiding this investigation is what coastal ecosystems are identified in the archaeomalacological component of the subsistence-remains assemblage, and to what extent does this information reflect patterns of resource management and territory exploitation through time? By using taxonomic identification, MNI and NISP counts, we expect to identify similar species in all sites notwithstanding cultural differences because they are all located within the same landscape. Detailed examination of the samples provides specific data of coastal resource exploitation of multiple ecosystems from Archaic, Ceramic Age, and Late Historic periods reflecting changes in habitat distribution along a continuation of socioenvironmental knowledge of subsistence resource acquisition.

Garcia, Lorena (Museu de Arqueologia e Etnologia da Universidade de São Paulo) and Fernando Almeida (Universidade Federal de Sergipe)

[23] *Ceramics and the Indigenous Histories of Southeastern Amazonia*

Ceramics buried in dark earths guard different histories from indigenous groups, including the millenary process of occupation interfluvial and riverine areas of southeastern Amazonia. These histories are often related to the regional settlement of Tupi-Guarani speaking groups, and the relations they established with their Arawak and Carib neighbors. We argue that some ceramic elements can be interpreted as a materialization of short or long time contacts between these groups. The main objective of this presentation is, hence, to discuss which ceramic elements have the potential to reveal interaction processes in the region between the Xingu and Tocantins rivers. We also discuss the importance of this region to help understand the wider archaeological context of the Lower Amazon.

Garcia, Dante and Guillermo De Anda

[46] *Climatic Changes and Ceramics during the Terminal Classic at Chichén Itzá*

According to the ceramic evidence that came out of the Chichen Itzá sinkholes or "cenotes," it seems the ancient Maya offered into these wells important quantities of pots and very unique ceramic vessels within a very specific period of time, and under very specific situations. The evidence indicates that most of the ritual activity occurred approximately between A.D. 900–1100, a time that coincides chronologically with the end of the Terminal Classic Period, the rise and subsequent abandonment of Chichen Itza, and two of the three strongest droughts in the last 3,500 years at the North side of the Yucatan Peninsula.

This information raises the question whether these ceramics are perhaps the archaeological evidence that shows specific vessels manufactured related to rainwater petition ceremonies. Cenote Holtún of Chichén Itza is probably one the most intact archaeological context at the North Maya Lowlands and can provide important information about climate stress moments that encouraged new ceramic manufacturing behavior.

Garcia, Dante (Zona Arqueologica de Monte Albán), Cesar Dante García Ríos (INAH-Oaxaca) and Ronald k. Faulseit (Museo "Field", Chicago, IL, EE.UU)

[231] *Gestión arqueológica, estructura base en el redescubrimiento de Dainzú-Macuilxochitl*

Durante el proyecto de investigación Arqueológica Dainzú-Macuilxochitl 2015, la gestión arqueológica ha permitido conjuntar la ciencia con la tradición. Partiendo de vincular a la comunidad con la investigación se ha logrado la reapropiación y el empoderamiento patrimonial, el fortalecimiento de la identidad, la reapertura del museo comunitario y el redescubrimiento de los zapotecos antiguos por los zapotecos contemporáneos. Los dos ejes de trabajo, mapeo y excavación, revelan algunos elementos urbanísticos y parte de la estructura político, social y religiosa de una ciudad sagrada que aparece desde el período formativo y continuo vigente hasta la llegada de los españoles. De hecho, debido a que los habitantes del pueblo moderno son descendiente de la ciudad antigua, el aprendizaje es recíproco porque sus conocimientos sobre la tradición moderna llevan implicaciones para la comprensión de actividades del pasado. La excavación reveló un complejo residencial del clásico tardío que contaba con su propio taller de figurillas, permitiendo conocer acerca de las divinidades y elementos de la ritualidad de la religiosidad zapoteca, misma que con los 5 entierros, 12 ofrendas y diversos materiales como cerámica, lítica y hueso, evidencian en parte, de la compleja dinamica de esta ciudad.

Garcia, Jorge (University of Florida Department of Anthropology)

[254] *New Perspectives for a Collaborative Community Archaeology in Colombia: Strengthening the Social Fabric through the Mitigation of Violent Pasts and the Re-Appropriation of Heritage Management*

Colombian archaeologists continue to be criticized for instituting nationalistic agendas and ignoring the demands of local communities interested in participating in the research and stewardship of archaeological remains. This criticism of Colombian archaeology has a strong foundation, but it does not generate alternatives on how to mitigate the lack of cooperation between archaeologists and communities. It is necessary to assess processes in which communities have worked along with archaeologists, to improve the discourse and the implementation of community archaeology in Colombia. I will assess the strategies applied in the first community archaeological project in Colombia, the San Jacinto Archaeological Project and Museum, as well as describe other important community projects in other regions in the country to identify factors of the value/costs for the communities participating in these projects to define how strategies and methodologies used in each of the projects can contribute to the future of collaborative community archaeology. Given Colombia's violent history, the regions where the above-mentioned community archaeological projects are conducted have been stricken by armed conflicts and can serve as comparative cases for the implementation of community archaeological projects in other regions of the world as a tool to mitigate violent events and conflictive pasts.

[254] *Chair*

García, Tobias [78] see Gallaga, Emiliano

García Ayala, Gabriela

[169] *La Terraza 912, un espacio domestico del Cerro Jazmín*

Las recientes investigaciones en el cerro Jazmín, sitio prehispánico de la Mixteca Alta Oaxaqueña, han comprobado que este sitio fue establecido en el periodo formativo, teniendo una ocupación constante del asentamiento hasta la llegada de los españoles. La excavación de una unidad habitacional en la terraza 912 del periodo Natividad da constancia de la continua ocupación del espacio y también un pequeño acercamiento a la forma de vida en esta época. El estudio de unidades habitacionales es fundamental en los estudios arqueológicos, ya que aportan valiosa información sobre la vida cotidiana de la población, así como información económica, política y religiosa, que en conjunto con otros datos ayudan a entender mejor los diversos procesos sociales llevados a cabo en una comunidad. Esta ponencia resume los datos de excavación de este espacio habitacional el cual fue utilizado en las dos principales etapas de esplendor del Cerro Jazmín (Ramos y Natividad). Aunado a esto se dará una visión general de los procesos sociales acontecidos en estas dos épocas en toda la Mixteca Alta.

García Capistrán, Hugo [256] see Vázquez López, Verónica

García de Quevedo Machain, Rafael [101] see Mountjoy, Joseph

García Ríos, Cesar Dante [231] see Garcia, Dante

Garcia-Plotkin, Patricia (Agua Caliente Band of Cahuilla Indians)**[29]** *Stewards of the Land: Agua Caliente Tribal Historic Preservation*

As stewards of the Tribe's heritage, the Agua Caliente Band of Cahuilla Indians has designated the Tribal Historic Preservation Officer (THPO) responsible for the protection, preservation, and management of a wide array of Historic Properties and Cultural Resources such as archaeological sites, historic-period properties, as well as expanses of land which are of traditional or ceremonial importance to Tribal membership. In order to best protect the Tribe's cultural heritage, the THPO has developed a Historic Preservation Management Plan, a Research Design, and a Historic Preservation Policy to provide guidance in regards to Historic Preservation on the Agua Caliente Indian Reservation and Traditional Use Area. This Presentation will provide an overview of the Agua Caliente THPO, its successes, and challenges.

[203] *Discussant***Gardner, A. Dudley (Western Wyoming College) and William Gardner (Yale University)****[155]** *A Comparison of Macro Botanical Materials Recovered from a Multi-Stratified Site in West Central Colorado: Dating from 200–13,000 B.P.*

Over the last 9 summers we have conducted extensive excavations at a rock shelter (Eagle Point) located above the Gunnison River in west central Colorado. The deposits are ladder and the macro botanical fill from the features indicates that from the Paleo Period to the last occupation in 200 B.P. similar plant resources were available and exploited. There are some differences. We want to briefly present the differences and similarities in plant exploitation from the Paleo (13,000 B.P.) through the Formative Period (500 B.P.). This presentation will focus on dominate botanical materials utilized across time and offer some suggestions as to why some plant resources are not evident during certain time periods at this site.

[155] *Chair*

Gardner, William [155] see Gardner, A. Dudley

Gardner, Chelsea (University of British Columbia)**[166]** *Local Identity in the Mani Peninsula in Classical Antiquity*

This paper presents a new approach to studying ancient identity in the Mani peninsula, using a combination of archaeological and epigraphic evidence and existing theoretical paradigms. Mani can be classified as an 'ahistorical historical' region—one that is inhabited within the historical period but which does not itself produce emic written evidence. Regions like Mani are often left out of typical inquiries into ancient Greek identity, which are overwhelmingly divided between studies of a) prehistoric identity through examinations of geography and archaeology; versus b) historic cultural identity through examinations of written records and literature. The result of this divide is that investigations of ancient ethnic and cultural identity tend to centre on areas with either an abundance or a complete absence of written history.

This theoretical methodology applied to this region is used in order to understand ancient identity in this remote peninsula, and the way in which regions like Mani (those which are occupied within the historical period, but which lack primary historical sources) are still able to contribute to the discussion of ancient identity. The results of a pedestrian survey in the Diros Bay region illustrate this 'ahistorical-historical' approach to identity on a hyper-local level.

[166] *Chair*

Garhart, Zachary [265] see Clauter, Jody

Garnett, Justin [40] see Pettigrew, Devin

Garnier, Aline [96] see Purdue, Louise

Garrett, Zenobie (New York University)**[188]** *Dynamic Communities in Early Medieval Aquitaine: A GIS Analysis of Roman and Medieval Landscapes in the Vézère Valley, France*

The transition from Roman to post-Roman Europe represents one of the sharpest breaks in the archaeological sequence of Europe. Over the past two decades, European archaeologists have increasingly argued for the necessity of a regional perspective to this transition. They argue against an interpretation that views the Roman-Medieval transition as a pan-European event, and instead, reframe the break as a series of localized events with independent chronologies and histories.

Although traditionally overlooked, the Vézère Valley in southwestern France occupies a unique environmental and social landscape in which to study this transition. While the topographic variability makes it a key place to test questions concerning the location and placement of communities, it also lies within a space of multiple, contested, and political influences providing a unique insight into the agency of communities in the formation and transformation of states. This paper presents the results of a dissertation project that analyzed the spatial relationships of traditionally and non-traditionally sourced site data with a number of environmental factors. The results provide crucial insights into the changing nature of community organization in the landscape and how this informs our understanding of community response to large-scale socio-political change.

Garrido, Francisco (University of Pittsburgh)**[259]** *The Illusion of Total Control in the Provinces of the Inca Empire*

Despite the interest of the Inca empire in promoting their ideology and establishing a strong political economy in their provinces, the actual result of that process was full set of "trade-offs" that involved the empowerment of local elites, and the independent development of parallel economies of sumptuary goods and household provisioning. This proposition challenges current and dominant "top-down" approaches to the Inca empire, where all economic and political transformations are seen as a direct product of the Inca intervention, without room for local agency. I propose to go beyond simple dichotomies of adaptation and resistance and explore other ways in which local populations may have infiltrated the structure of the empire for their own benefit as a "bottom up" response to imperial control.

Garrison, Thomas [228] see Alcover, Omar

Garrison, Ervan

[249] *Discussant*

Garrone, Florencia [176] see Scheinsohn, Vivian

Garvey, Raven (University of Michigan)

[289] *Cultural Transmission and Artifact Variation in Late Prehistoric New Mexico*

Prehistoric boundary dynamics likely affected aspects of cultural transmission. Several lines of archaeological evidence indicate increased economic importance of bison and related inter-group tensions ca. A.D. 1300 in southeastern New Mexico, a boundary zone between the Pueblos to the west and cultures of the southern High Plains to the east. This paper presents preliminary results of a study centered on artifact variability and designed to test the hypothesis that model-based, biased cultural transmission, or heightened incentive to “advertise” group membership influenced the fidelity of projectile point manufacture in this context.

Garzon-Oechsle, Andres (Department of Anthropology, Florida Atlantic University) and Valentina L. Martínez (Department of Anthropology, Florida Atlantic Univ)

[205] *Results of Survey and Preliminary Analysis of Manteño Archaeological Sites with Stone Structures in the Las Tusas River Valley, Rio Blanco, Ecuador*

This poster presents information on the Manteño occupation (1500 B.P.–1532) of the cloud forest within the Chongón-Colonche Mountains of coastal Ecuador. Survey and data recovered from eight archaeological sites containing stone structures located alongside Las Tusas River drainage suggest a specific mode of adaptation and settlement pattern that left a particular landscape signature. The survey was conducted by the Florida Atlantic University Archaeological Field School in Ecuador during the summer of 2015. The data reveals a pattern of maximized use of restricted living spaces in such rugged terrain. At least one of the investigated sites displays a concentration of 22 structures, indicating a semi-urban settlement design. Previous investigations suggest that the Manteño articulated a diversity of environments characterized by the presence of sustainable human settlements across the region. Therefore, results of this investigation will contribute to a larger discussion of Manteño socio-political organization.

Gasco, Janine (CSU-Dominguez Hills)

[292] *Luminescence Dating at the Postclassic Site of Gonzalo Hernández, Chiapas, Mexico*

In the Soconusco region of Chiapas, Mexico, we are still struggling with refining the Postclassic ceramic chronology. At the site of Gonzalo Hernández, the evidence suggests that the principal occupation of the site was during the Late Postclassic Period (ca. 1300–1520 C.E.), but a small percentage of sherds date to earlier periods. In an effort to approach the local ceramic chronology from a new perspective, a small sample of sherds were dated using luminescence dating. The results have clarified certain issues—namely that many of the ceramics were produced in the Late Postclassic Period. Curiously, however, some dates spilled over into the Colonial Period, an unlikely scenario as no known historic materials (e.g., metal goods, glazed ceramics) were found at the site. In this paper, I discuss how the various dates generated by luminescence dating can be interpreted.

Gates St-Pierre, Christian [84] see McGrath, Krista

Gates St-Pierre, Christian (Université de Montréal), Krista McGrath (BioArCh, University of York), Keri Rowsell (BioArCh, University of York) and Matthew Collins (BioArCh, University of York)

[176] *The Identification of Archaeological Bone through Non-Destructive ZooMS: The Example of Iroquoian Bone Projectile Points*

ZooMS (Zooarchaeology by Mass Spectrometry) is a well-established technique for the identification of archaeological bone. In this study, we apply a refined ZooMS method to worked bone points in order to analyse them in a completely non-destructive fashion. The traditional ZooMS technique requires destructive analysis of a specimen, which is obviously problematic when dealing with intact rare artefacts. The bone points are part of large assemblages of bone tools and manufacturing debris recovered from two pre-contact Iroquoian village sites located in southern Quebec, Canada. White-tailed deer was the most important mammal species identified in the faunal assemblages. This information combined with the approximate size of the original bone suggested the points were likely deer, however, preliminary ZooMS analyses using this new technique revealed the unexpected species identification of bear. The results were subsequently confirmed using traditional ZooMS and DNA analysis. Further testing of additional artefacts from the site using the modified ZooMS method has resulted in several additional species identifications. These surprising results would never have come to light through traditional zooarchaeological methods, highlighting the importance of advancing biomolecular research in this field.

Gatto, Maria [177] see Banks, Kimball

Gaudreau, Mariane (Simon Fraser University) and George Nicholas (Simon Fraser University)

[144] *Tackling Ethnicity from Anthropological, Archaeological, and Indigenous Perspectives: The Case of the St. Lawrence Iroquoians*

Cultural anthropologists' and archaeologists' interest in theorizing identity has a long history. Anthropologists have generally focused on emic perspectives to gain insight into contemporary individual and group identity, while archaeologists have relied mainly on material culture to discern identity in the past, with relatively little attention paid to the views of contemporary peoples. When archaeological interpretations conflict with those of contemporary peoples, serious concerns arise. This is the case in Quebec where First Nations groups today claim to be the descendants of certain archaeological cultures that the archaeologists have attributed to someone else, and are thus denied what they consider as their cultural heritage. In this paper, we review ways in which identity has been theorized by cultural anthropologists and archaeologists in the last 30 years. We then consider the implications of identity and ethnicity theories in contemporary contexts (e.g., tribal and inter-tribal relations, land claims, heritage management) using the case study of the ethnic identity of the St. Lawrence Iroquoians.

Gauthier, Nicolas (Arizona State University)**[72]** *Agricultural Risk Management in Mediterranean Environments: A Computational Modeling Approach*

Small-scale agriculturalists in the Mediterranean Basin rely on multiple strategies including diversification, intensification, and storage to maintain a stable food supply in the face of environmental uncertainty. Each of these strategies requires farmers to make specific resource allocation decisions in response to environmental risks and is thus sensitive to variability in both the spatiotemporal pattern of risk and the ability of farmers to perceive that pattern. In this talk, I present an agent-based model of a Mediterranean agroecosystem. By driving the model with realistic environmental dynamics derived from simulations of mid-Holocene Mediterranean climate, and by allowing the psychology of risk perception to vary among individual farmers, I explore the hidden vulnerabilities of traditional risk-management strategies to periods of rapid climate change. I show that even when farmers are able to manage risk "optimally" in light of past experience, changes in the spatiotemporal pattern of rainfall can still lead to major food shortfalls.

Gauthier, Rory [210] see Adler, Rachel

Gaylord, Donald (Washington and Lee University)**[284]** *Revisiting a Stratified Random Sample of the 18th-Century Liberty Hall Campus of Washington and Lee University*

Many of us at institutions with long-standing archaeology programs benefit greatly from the collections we inherit. However, these also present certain challenges. One such example is a stratified random sample done by Washington and Lee Archaeology in the 1970s on its eighteenth-century Liberty Hall Campus. Exceptional in historical archaeology at a time when many archaeologists were still stripping the plowzone from sites, a stratified random sample provides the statistical benefits of randomness, while still ensuring systematic coverage of the test area that a simple random sample does not achieve. Spatial analysis of this collection with statistical methods unavailable at the time of its excavation has led us to realize that we needed a larger sample in order to meet new preservation needs and to answer new research questions. Recent excavations have supplemented the sample in our attempt to determine adequate quadrat size and spacing to accomplish our research.

Gearty, Erin (Flagstaff Area National Monuments), Rachel Freer-Waters and Gwenn Gallenstein (Flagstaff Area National Monuments)**[63]** *Wrinkle-free Clothing: Conservation and Rehousing of Prehistoric Cotton Textiles from Navajo, Walnut Canyon, and Wupatki National Monuments, Arizona*

In 2014, the Flagstaff Area National Monuments received funding to conserve and re-house more than 300 non-burial related prehistoric cotton textiles from Navajo, Walnut Canyon, and Wupatki National Monuments housed at the Museum of Northern Arizona (MNA). The textiles were woven in the 1100s A.D. and range from expediently constructed objects to technologically complex clothing with dyes. These prehistoric remnants of cloth were excavated by archaeologists in the 1930s and 1960s, and many remained in the crumpled state in which they were found. Many fragments also still had soil accumulation and other debris from the excavation site, and due to creasing, they could not be adequately studied or fully viewed. The project included conservation treatments, as needed, and designing of storage systems that provide preventive care for the textiles. Conservation was undertaken with care to preserve any potential material that might be valuable during scientific analysis, and balance those interests with the preservation of each piece. In this presentation, we discuss how the project was completed, and provide an analysis of the textiles from Wupatki and Walnut Canyon National Monuments.

Geber, Jonny (University of Otago)**[25]** *"Children in a Ragged State": Seeking a Bioarchaeological Narrative of Childhood in Ireland during the Great Famine (1845–52)*

More than half of all victims of the Great Famine in Ireland from 1845 to 1852 were children, but despite this fact relatively little attention, amongst a vast body of famine research undertaken to date, has been undertaken to explore their experiences and what realities they endured during this period. Following the archaeological discovery and bioarchaeological study of a large famine-period mass burial ground adjacent to the former workhouse in Kilkenny City, the physical experience of this calamity for over 500 children that ultimately succumbed to malnutrition and infectious disease has become evident. The experience of poverty, famine, and institutionalisation can be discerned from skeletal markers in their bones, and when interpreted in their historical and cultural context, they enable a unique insight into the reality of growing up as a child in Ireland during one of the worst subsistence crises in human history.

Geib, Phil (Nebraska State Historical Society)**[63]** *Mesoamerican Grooved Curved Sticks: Short Swords, Fending Sticks, or Other Purpose?*

Curved sticks with longitudinal facial grooves were dredged from the Sacred Cenote at Chichén Itzá at the start of the 1900s. They are also depicted in art there and at other sites such as Tula. These artifacts are similar to specimens recovered from various sites throughout the North American southwest, where one suggested function was for defense against atlatl darts. Accepting this speculative account, Mesoamerican archaeologists have identified these artifacts as fending sticks. Starting in the late 1980s, some started to doubt the fending interpretation, with Hassig (1988:294–295) arguing that the grooved curved sticks were specialized short swords for close fighting. My analysis of the Chichén Itzá sticks along with a consideration of the mural evidence disproves the short sword argument, but does not corroborate the fending role. However, there is a tantalizing bit of ethnographic evidence from Diego de Landa that hints at the possibility of the Yucatan Maya deflecting atlatl darts using short sticks in a ritual designated as a dance. There is also some use-wear support for the fending interpretation from the southwest, where this artifact type dates to at least 8,000 years ago. Fending atlatl darts in ritual fights remains a probable interpretation of these sticks.

Geiger, Crystal (Seminole Tribe of Florida) and Jack Chalfant (Seminole Tribe of Florida)**[29]** *Flipping the Desk: Increasing Tribal Participation in Archaeological Investigations*

Tribal archaeology expands the interpretation of the archaeological record through the incorporation of tribal perspectives. The Seminole Tribe of Florida (STOF) Tribal Historic Preservation Office (THPO) partnered with the sixth grade students of STOF Pemayetv Emahakv ("Our Way") Charter School in 2014 to excavate a little known, historic, Anglo-American home-site on the Seminole Brighton Reservation. The THPO worked with the students to document their observations and participate in the site's excavation. Contrary to traditional archaeological projects, in which non-natives investigate and decipher native sites, this field school focused on Seminole interpretations of a non-Seminole site. This research, in tandem with oral histories gathered from tribal members, allowed for a more expansive view than previously recorded. This project utilizes the active engagement of tribal members and archaeologists in order to yield a more nuanced, complete view of the past.

Geller, Pamela (University of Miami)**[24]** *"The Creation Of Silences": Medical Officers & the Morton Collection*

Official historic documents proclaimed nineteenth-century medical officers as heroic for administering to the inflicted during wars that defined and expanded the United States' national borders. Military doctors were especially welcomed by U.S. soldiers and Euro-American settlers on the Florida frontier where life was precarious. Yet, their activities were often far from benevolent; many advanced necropolitical conditions. Rather than humanitarian crisis, medical officers regarded the epidemiological disasters and forced relocations of Native Americans as a scientific opportunity. Their gathering of data—observations on infectious diseases, collection of crania—worked to further erase, to let die, native peoples and the places they had inhabited. "The production of traces," Michel-Rolph Trouillot reminds us, "is always also the creation of silences." Can a biohistoric study of these traces—archival and skeletal—yield understandings of past events and peoples that counterpoise official histories? Or, does giving voice to those silenced in the past simply reflect researchers' social privileges, thereby reinforcing social inequalities in the present? As an example, I discuss the Samuel G. Morton Crania Collection. I concentrate on the decedents acquired for Morton by medical officers stationed in Florida during the Seminole Wars.

Gentil, Bianca (The Pennsylvania State University)**[234]** *Particularism vs. Broad Strokes: The Application of Political Economic Paradigms of the Elite Classic Maya in Northwestern Belize*

By bringing together theoretical frameworks utilized by scholars to describe the Classic Maya political economy, this work evaluates their applications in the case of the site of La Milpa. Located in northwestern Belize, La Milpa experienced a demographic rise during the Late Classic/Terminal Classic periods, followed by a rapid decline shortly thereafter. This poster explores Maya political economy mechanisms as defined by Kenneth Hirth in his 1996 piece, specifically focusing on aspects of elite craft control and differential access to imported goods. By analyzing ceramic and lithic material excavated during 2008–2015 field seasons from the courtyard of La Milpa's ruling family, we gained a greater understanding of the modes of production (craft specialization and control), consumption (elite communal and private activities), and distribution (access to interregional wares) for the La Milpa elite. From there, we assessed whether or not the operating processes of the La Milpa political economy share similarities from other areas throughout the Maya region during the Late Classic.

Gentry, Jewel (California State University Monterey Bay) and Donna L. Gillette (University California Berkeley)**[175]** *Marking the Sacred: Rock Art Images in an Unusual Context*

Rock art images, generally associated with outdoor landscapes and boulders, occur in an unexpected context and very sacred space in the California Spanish colonial community of Mission San Miguel the Arcángel. The Mission Community consisted primarily of Salinan and Tulare native populations and included neophyte Indians from previously established nearby Missions. It has been suggested that images found etched throughout the sanctified interior are analogous to California Indian rock art with subsequent parallels being drawn from regional archaeological sites. Current research broadens previous studies by relating spatial positions of proposed neophyte etchings within San Miguel to Catholic mandates which directed the use of sacred space. Spatial and liturgical organization of neophytes within the mission church was defined by many factors including; age, gender, musical aptitude, and level of religious training, with access to sacred space being linked to neophyte identity and status. Associated to this, proposed neophyte etchings within the church of San Miguel are found in pronounced form in areas of access corresponding to prominent status within the church. This observation offers many compelling perspectives related to neophyte continuance of rock art traditions and the conflation of indigenous traditions in the continued formation of sacred space.

Georgakopoulou, Myrto [257] see Abell, Natalie

George, Bey [26] see Gallareta Negron, Tomas

Georgia, Fox [183] see Schoenike, Katelyn

Gerard-Little, Peregrine**[144]** *Seeing the Forest for the Trees: Human-Landscape Interactions Explored through Wood Charcoal Assemblages from Three Seneca Iroquois Settlements (1670–1750 C.E.)*

This paper presents an assessment of archaeologically recovered wood charcoal data from comparable archaeological contexts at three eastern Seneca sites: Ganondagan (1670–1687 C.E.), White Springs (1688–1715 C.E.), and Townley-Read (1715–1750 C.E.). These sites were successively occupied by the same community through periods of both residential upheaval and relative peace, as well as interaction with a number of non-Seneca cultural traditions and colonial entanglements. This project's use of archaeological materials to understand human-landscape interactions at a site-level and site sequence scale contributes to modeling dynamism in these systems, particularly in an area dominated by indigenous processes, at the 'periphery' of colonial control. Inter- and intra-site differences in wood species occurrence in domestic features are interpreted within a framework that places Seneca landscape practices in the context of ongoing modification of local environments, culturally specific landscape practices, and political and economic variability across the occupation of these three sites.

Gerdau-Radonic, Karina (Bournemouth University) and Jelle DeFrancq (Bournemouth University)**[206]** *Tooth Tales from Lima: Pre-Columbian Dental Health along the Central Coast of Peru*

Changes in political, economic, and social organisation may affect diet and access to resources, and consequently dental health. This study aimed to assess the dental health of two populations from Peru and to establish differences over time. Caries, Linear Enamel Hypoplasia (LEH), ante-mortem tooth loss (AMTL), and calculus were recorded for Tablada de Lurín (TL; 1 A.D.–200 A.D.) and for Pueblo Viejo (PV; 1476 A.D.–1534 A.D.). Frequencies were examined in order to assess sex and inter-population differences. The data was compared to earlier research. Seventy-three individuals from TL and 39 individuals from PV were selected. Results show no significant inter-sex or inter-population differences in LEH and calculus frequencies. Significantly higher caries frequencies in PV can be attributed to higher female frequencies. Female AMTL rates were higher than males' for both series. AMTL was lower in PV. Differences in caries and AMTL between the sexes of both series can be attributed to differences in foodstuff consumption and to biological differences. The caries frequencies in PV are consistent with maize availability under Inca rule. Results show that socio-political change can impact on dental health over time. However, this impact can be variable between contemporaneous populations.

Ghezzi, Ivan, Alan Hogg (Radiocarbon Dating Laboratory, University of Waika), Rodolfo Rodriguez (Laboratorio de Dendrocronología, Universidad de Pi), Antonio Mabres (Laboratorio de Dendrocronología, Universidad de Pi) and Gretel Boswijk (Tree-Ring Laboratory, University of Auckland, New)

[56] *Building a Dendrochronology for the Coast Of Peru: High-Precision 14C Dating Results from Chankillo, Casma*

We present preliminary results from our project to create dendrochronological sequences for the coast of Peru, from the earliest monumental constructions to the present. Our first results come from Chankillo (400–200 B.C.), in coastal Ancash, which has numerous in situ lintels made from algarrobo wood. Our study of living algarrobos shows high correlation between ring-widths and climate records of the past century. The principle of uniformitarianism dictates the same was true at the time of Chankillo. Our dendrochronological (tree-ring width, wood density) measurements from Chankillo have produced the first dendroarchaeological series from the Central Andes. It is a “floating” sequence that illustrates the chronology of construction of the site, without the ability yet to give absolute dendrochronological dates. However, wiggle-matched radiocarbon dates on wood from these series give us a highly precise approximation of its calendar date range. Improved dating of this site helps fine tune archaeoastronomical analyses of its solar observatory, and throws light on the possible contemporaneity between the rise of Chankillo and the decline of Chavin de Huanter. Finally, ring variability shows the annual climatic variations at the time, in particular possible El Niño events on the north coast of Peru.

Ghezzi, Iván [57] see Makowski, Krzysztof

Giardina, Miguel [204] see Neme, Gustavo

Gibb, James (Smithsonian Environmental Research Center)

[159] *Archaeological Considerations in the Study of the Anthropocene*

The Anthropocene epoch, garnering the interest of geologists and environmental scientists for the past decade, has now entered the archaeological lexicon. As in other disciplines, questions remain about what Anthropocene means and when it began, as well as how it differs from the Holocene. This presentation explores some of these issues and offers a ground-up approach by which conventional approaches in archaeology might be adapted to a reassessment of the human experience and the role of humanity in this newly defined geological epoch.

Gibbons, Kevin [191] see Hambrecht, George

Giblin, Julia [149] see Duffy, Paul

Giblin, Julia (Quinnipiac University)

[166] *Human Mobility during the Greek Neolithic: A Multi-Isotope Analysis of the Burials from Alepotrypa Cave*

This study measures strontium ($^{87}\text{Sr}/^{86}\text{Sr}$), oxygen ($\delta^{18}\text{O}$), and carbon ($\delta^{13}\text{C}$) isotope ratios in human and domesticated animal teeth from Alepotrypa Cave, a cave that was used for both shelter and burial of the dead from the Early to the Final Neolithic Period (6000–3200 B.C.) in southern Greece. Previous radiogenic isotope research on archaeological material in Greece indicates that there are significant differences in $^{87}\text{Sr}/^{86}\text{Sr}$ ranges in the Aegean due to the complex geology (Nafplioti 2011; Richards et al. 2008). This established isotopic baseline is compared to enamel samples from Alepotrypa Cave to evaluate whether the individuals in the cave grew up in the surrounding geological (tectonic) zone. Preliminary strontium results indicate that the people buried in the cave originated from both “local” and “non-local” geological contexts. These data are also compared to $\delta^{18}\text{O}$ and $\delta^{13}\text{C}$ values from the same samples to determine whether these independent measures of location and diet corroborate the strontium results.

[149] *Chair*

Gibson, Terry [190] see Coons, Aaron

Gidusko, Kevin, Rachael Kangas (Florida Public Archaeology Network), Kassie Kemp (Florida Public Archaeology Network) and Nigel Rudolph (Florida Public Archaeology Network)

[260] *CLAASP: A Public Archaeology Initiative to Preserve Archaeological Information in Central Florida*

The Communities of Lake Apopka Artifact Survey Project (CLAASP) is an attempt by several regions within the Florida Public Archaeological Network (FPAN) to preserve information about the many unprovenienced collections of artifacts hailing from this area in Central Florida. Relative to several other areas in the state, the Lake Apopka region is under-represented in the archaeological record. This is in part due to the long term use of much of this area for agriculture prior to the creation of laws requiring cultural resource surveys and the collection of many artifacts by avocational archaeologists. Many of these unprovenienced collections have found their way into local museums around the Lake and throughout the region. CLAASP seeks to create a basic database of these collections by creating partnerships with local cultural institutions and avocational archaeologists. This project will allow FPAN to engage the public via open lab days, educational opportunities, and the creation of interpretive material.

Giesso, Martin (Northeastern Illinois University, Department of Anthropology), Andrés Laguens (Instituto de Antropología de Córdoba, CONICET, Uni), Silvana Bertolino (Facultad de Matemática, Astronomía y Física, Unive), Michael Glascock (Missouri University Research Reactor, University o) and Mathew Boulanger (Missouri University Research Reactor, University o)

[91] *NAA Analysis of Ambato Ceramics from the Southern Andes (Eastern Valleys of Catamarca and Tucuman, Argentina)*

We analyze the provenience of clays used in the manufacture of Aguada ceramics, mainly black incised, characteristic of the Ambato valley of southeastern Catamarca (Argentina). This ceramic style is also present in lesser quantities in sites of other neighboring valleys/regions, most of it manufactured with the same clay. The research is part of a broader project to study economic organization and the emergence of complex societies in northwestern Argentina. Research that took place in the Ambato Valley since the early 1990s has explored lifestyles characterized by institutional differences created and maintained between Aguada subgroups approximately between 500–1000 A.D.

Gifford, John A. [290] see Koski, Steven

Gil, Adolfo (CONICET-IANIGLA Grupo Vinculado San Rafael), Gustavo Neme (CONICET-IANIGLA Grupo Vinculado San Rafael), Amber Johnson (Truman State University), David Zeanah (California State University Sacramento) and Robert Elston (University of Nevada, Reno)
[94] *Human Response to Environmental Change during the Early/Mid Holocene in Central Western Argentina: Frame of Reference in Comparative Perspective*

Early/Middle Holocene human strategies are an archaeological topic of debate in arid central western Argentina. Among the controversies are whether population decreased and what were human responses to increased aridity. In this presentation, we use Binford's environmental frames of reference to model regional Early and Middle Holocene subsistence. Radiocarbon trends are used as paleodemography proxy, archaeofaunal, archaeobotanical, lithic assemblages, and isotopes on human bone are used to approach to the human strategies during this time period. Based on human behavioral ecology, the results are compared with the Great Basin region.

Gil, Adolfo [204] see Neme, Gustavo

Gil, Adolfo [94] see Zeanah, David

Giles, Brett [115] see Koerner, Shannon

Giles, Bretton (CEMML, Colorado State University), Shannon Koerner (CEMML, Colorado State University) and Eric Skov (CEMML, Colorado State University)
[155] *Two Paleoarchaic Sites along Wind Creek in Riley County, Kansas*

CEMML archaeologists recently identified and tested two closely related Paleoarchaic sites, 14RY8129 and 14RY8130, on the Fort Riley Installation. These sites are positioned on the south side of Wind Creek, which is a minor perennial tributary of Wildcat Creek, and part of the larger Kansas River watershed. Survey and testing at the two sites recovered several fragmentary projectile points diagnostic of the Paleoindian and Early Archaic periods, including a unifacially fluted Clovis point; a possible Hell Gap variant or Milnesand stemmed point; and a side-notched Logan Creek point from the Early Archaic Period. Other artifacts include debitage, biface fragments, and other tools that were recovered from surface and subsurface testing. We explore variability in the proportion and breadth of lithic reduction activities performed at these two sites. We also discuss the relationship between 14RY8129 and 8130 and other Paleoarchaic sites in Kansas and the eastern Plains, as well as why certain locales could have been preferentially selected, based on Late Quaternary and Early Holocene environments, and early hunter-gatherers' subsistence strategies.

Gilhooly, William [285] see Wilson, Jeremy

Gill, Kristina [55] see Braje, Todd

Gill, Lucy (Columbia University) and Dorothy Peteet (Lamont-Doherty Earth Observatory/NASA Goddard Inst)

[85] *A Sediment Story: Anthropological and Environmental Continuity and Change along the Hudson River Estuary*

Wetlands have a long history of anthropogenic influence due to their proximity to watersheds, traditionally optimal localities for human settlement. Sediment stratigraphy from these ecosystems is an important source of paleoecological data, as they experience high depositional rates and, due to their anoxic environments, preserve organic material. Humans have acted upon one such watershed, the Hudson River Estuary, since the Paleo-Indian Period (10,500–8000 B.C.E.) and have been a keystone species for much if not all of that time. To what extent have the cultural landscapes created by pre- and post-contact peoples resulted in change at the ecosystem scale? This study presents the results of a recent analysis of multiple soil cores extracted from Haverstraw tidal marshlands, adjacent to the widest part of the Hudson River. It utilizes loss-on-ignition, macrofossil analysis and X-Ray Fluorescence spectroscopy, in combination with Accelerator Mass Spectrometry radiocarbon dating, to construct a high-resolution paleoenvironmental record that complements ongoing archaeological investigations. Biotic composition indicates that despite the introduction of invasive species following European settlement in 1666 C.E., key native species persist, evidencing sustainability of the ecosystem. Sediment chemistry, similarly, has been influenced by humans throughout the history of the tidal marsh but demonstrates the ecosystem's long-term resilience.

Gillam, Christopher (University of South Carolina (SRARP-SCIAA)), Andrei Tabarev (Institute of Archaeology and Ethnography) and Masami Izuho (Tokyo Metropolitan University)

[21] *Continental Roots and Coastal Routes? Merging Archaeological, Bio-Geographic and Genomic Evidence of the Peopling of the Americas*

Genetic evidence suggests that the Amerind haplogroups A-D coalesce in north-central East Asia (CEA), around Mongolia. How, then, do we have a late Pleistocene coastal migration to the Americas when ancestral populations are centrally-located in the heart of the continent? One answer is offered by bio-geographic and archaeological evidence and an (in)convenient gap in our genetic knowledge of Upper Paleolithic Japan. Japan's mainland, Honshu, is proposed as the genetic refugia of the first Americans, in contrast to the Beringia hypothesis. These populations, established by a southeastern migration (ca. 40k–35k B.P.) from CEA/Mongolia to Kyushu/Honshu, via China/Korea, were themselves subsequently displaced, physically and genetically, by a southern migration (ca. 18k–16k B.P.) of northern Siberian hunters from Sakhalin/Hokkaido, progenitors of the later Jomon. Genetic isolation and subsequent displacement/migration are more likely from a large island setting with low population density, nearly 20,000 years of prior occupation and diverse cultural adaptations, than a continental-linked landmass with little archaeological evidence dating prior to 15,000 – A southeastern migration around 35,000 B.P. from CEA to Japan set the stage, with northern Siberian migrants around 16,000 B.P. displacing Honshu's established Paleolithic cultures, driving some maritime-adapted populations northward along the opening coastline and onward to the Americas.

Gillam, Christopher [132] see Uchiyama, Junzo

Gillette, Donna L. [175] see Gentry, Jewel

Gilmore, Zackary (University of Florida) and Kenneth Sassaman (University of Florida)**[41]** *From Distributed to Place-Based Communities: The Ceramic Social Geography of Late Archaic Stallings Societies*

North America's oldest pottery-making societies belonged to the Late Archaic Stallings culture of Georgia and South Carolina. The basic culture history of Stallings archaeology is relatively well-known; however, the types and scales of communities constructed by Stallings people, along with the nature of the connections between them, remain poorly understood. This poster presents preliminary results of research that uses compositional data from Stallings fiber-tempered pottery to investigate the transition from the loosely bounded "distributed communities" of Early Stallings (5150–4100 cal B.P.) times to the more fixed and formalized "place-based communities" characteristic of Classic Stallings (4100–3800 cal B.P.). To this end, more than 400 pottery samples from 13 sites along the Savannah and Ogeechee Rivers were subjected to neutron activation analysis (NAA), while half of those were also thin-sectioned and examined petrographically. These pottery data were then compared to that from a series of clay reference samples to infer patterns of mobility and interaction over the course of the Late Archaic Period. The primary goal of these analyses was to evaluate the extent to which Classic Stallings social formations were constrained and/or enabled by the Early Stallings arrangements that preceded them.

Gilmour, Danny (Willamette Cultural Resources Associates, Ltd.), Thomas Brown (Portland State University), Paul Solimano (Willamette Cultural Resources Associates, Ltd.) and Kenneth Ames (Portland State University)**[114]** *Radiocarbon Chronology of the Western Stemmed Tradition on the Columbia Plateau*

The Western Stemmed Tradition (WST) is an early cultural phase on the Columbia Plateau of western North America. Much of the seminal work establishing the timeframe of WST is now decades old and suffers from imprecise dating. In this poster, we review previously compiled data, update stratigraphic interpretations, and model existing radiocarbon assays within a Bayesian framework. Preliminary results indicate that WST on the Columbia Plateau is at least coeval with Clovis and spanned at least 1,900 calendar years, but possibly 2,800 years. A population model based on date frequency suggests WST groups peaked between 12,100 and 11,200 cal B.P. WST thrived during the Younger Dryas, a period long considered a possible cause for the collapse of Clovis and the extinction of roughly 35 genera of animals.

Gilstrap, William (University of Missouri, Columbia), Vassilis Kilikoglou (Laboratory of Archaeological Materials, N.C.S.R. ") and Peter Day (Department of Archaeology, University of Sheffield)**[257]** *Painting and Firing Technology in the Late Bronze Age Saronic Gulf: A Study of Ceramic Microstructures by SEM*

The end of the Bronze Age in the Saronic Gulf boasts at least three pottery production centers, at Kontopigado, Attica, on the north part of the island of Aegina, and in northeast Corinthia. All three produce a similar range of goods and although each has a different set of production practices, certain technological information was shared.

Focusing on the painted fineware pottery, it is evident that all three centers decorated pots with dark-on-light motifs using either red or black paint. Analysis by SEM-EDS demonstrates that both red and black paints were manufactured using iron-rich raw materials indicating that each center used a three stage firing sequence. Macroscopic and microstructural evidence indicate that all three centers shared this highly technical knowledge, but not all had the right locally available raw materials to produce high quality black paints.

This paper focuses on the analysis of both black and red paints by SEM-EDS. Through this analysis, we have reconstructed certain surface decoration and firing technology in the production of Mycenaean fineware pottery. The results of this study present new insight into the different practices of neighboring production centers, the sharing of technological knowledge, and how it was applied using locally source raw materials.

Gilstrap, William D. [180] see Luo, Wugan

Gingerich, Joseph [218] see Kitchel, Nathaniel

Gingerich, Joseph (Smithsonian Institution/NC State University)**[218]** *Terminal Pleistocene Depositional Patterns and their Hypothesized Impact on Human Populations in the Middle Atlantic Region, USA*

Depositional regimes determine the burial and preservation of archaeological sites. Before, during, and after the Younger Dryas interval, we see differences in depositional patterns throughout the Middle Atlantic Region of the United States. In this paper, we explore both differences and similarities in alluvial and eolian deposition within the Middle Atlantic Coastal Plain, Piedmont, and Ridge and Valley physiographic provinces of eastern North America. Using select case studies, we explore what role, if any, varying landscape stability played in the settlement or use of river valleys by human populations during the Late Pleistocene and Early Holocene.

[218] *Chair***Giomi, Evan (University of Arizona) and Matt Peeples (Arizona State University)****[17]** *Pueblo Bonito as a Material and Spatial Network*

While formal network analyses (and traditional statistical analyses) can be used to understand the network relationships between archaeological sites, they can also be geared towards understanding relationships within sites, both between architectural units and between different classes of artifacts. Using these techniques on a network of general material categories (like turquoise or shell) from different room contexts within Pueblo Bonito potentially reveals different "sets" of material classes grouped either through common use or deposition together. Similar "sets" can be derived from a network of room assemblages by using cluster analysis. Comparison between the room assemblage network and the material class network helps confirm the validity of the material sets. Mapping these sets of associated material types onto an architectural plan of Pueblo Bonito reveals differences both between construction sequences and across the east-west divide of the building, reinforcing an interpretation of a dual division in the architecture.

Giovannetti, Marco Antonio [259] see Lynch, Julieta

Giovas, Christina (University of Queensland)**[222]** *Caribbean Anthropogenic Paleozoogeography: Cultural and Ecological Significance of Animal Introductions in the Lesser Antilles*

Studies of exotic animal introductions in the insular Caribbean have focused on the paleozoogeography, origin, and dispersal patterns of these taxa, but have yet to resolve a number of important, related issues. Among these are the critical problems of distinguishing live introductions from the import of

animal parts and assessing the degree of animal management practiced by Amerindians. These questions are fundamental to understanding the broader cultural and ecological significance of faunal translocations in the Caribbean, particularly the long-term impact of exotic species on Antillean ecosystems, but require a multi-evidentiary approach to address. Taking a theoretically informed perspective, here I review data provided by heavy isotope analyses, ethnohistory, zooarchaeology, and ecology to understand the anthropogenic dispersal, cultural role, and environmental impact of exotic species in the prehistoric Lesser Antilles, focusing on opossum (*Didelphis marsupialis*) and agouti (*Dasyprocta* sp.), with consideration given for rarer taxa such as deer (*Cervidae*) and pecarry (*Tayassu/Pecari*).

[222] Chair

Giovas, Christina [223] see Fitzpatrick, Scott

Giraldo Tenorio, Hernando (Universidad del Cauca), Robert Speakman (University of Georgia) and Michael Glascock (University of Missouri)

[57] *Pottery Production and Consumption in the Andean-Amazonian Frontier in Southwestern Colombia (2500–500 B.P.)*

The circulation of goods and knowledge between Amazonian and Andean societies from southwestern Colombia has been understood as pivotal for the development of political hierarchies in the region since 2500 B.P. However, such circulation has not been supported by solid empirical evidence. By using neutron activation data, we document pottery production, distribution, and consumption in a frontier region between Andean and Amazonian groups. Ceramic samples were obtained from a systematic regional survey in four valleys in the Caquetá River Basin: Valle de las Papas, Santa Rosa, Descanse, and Yunguillo. The compositional analysis of clay provides evidence of intra and interregional exchange of utilitarian and prestige pottery goods. Even though pottery production was mainly local, there was some movement between the valleys. There is no strong evidence for the consumption of foreign pottery; therefore, the long established idea emphasizing a solid interaction sphere between Andean and Amazonian groups must be reconsidered for this region.

Giron-Abrego, Mario [294] see Saldana, Melanie

Gísladóttir, Guðrún [95] see Adderley, Paul

Glascock, Michael [57] see Makowski, Krzysztof

Glascock, Michael (University of Missouri)

[91] *A Database of Neutron Activation Analysis Characterizing Indigenous Ceramics from South America*

The earliest ceramics in South America were made by the indigenous peoples at least 7,500 years B.P. Ceramics were used for a variety of purposes, including cooking and storage vessels, funerary urns, toys, ceremonial items, sculptures, and other art forms. Over the past 25 years, the Archaeometry Laboratory at the University of Missouri Research Reactor has performed neutron activation analysis on more than 7,000 ceramics and clays from locations throughout South America to establish a comprehensive geochemical and descriptive database. The ceramics database has facilitated a wide range of investigations concerning both local production and exchange over long distances. This poster will describe the database and provide an overview of recent research along with suggestions for future research.

[57] Chair

Glascock, Michael D. [180] see Luo, Wugan

Glascock, Ph.D, Michael D. [93] see Orozco, Joseph

Glassburn, Crystal (Anthropology Department, University of Alaska Fairbanks), Ben A. Potter (Anthropology Department, University of Alaska Fair), Joshua D. Reuther (University of Alaska Museum of the North, Fairbank) and Matthew J. Wooller (Alaska Stable Isotope Facility, University of Alas)

[124] *Steppes Across the Land: Reconstructions of Steppe Bison Mobility Patterns in East-Central Alaska through Isotopic Analyses and Implications for Prehistoric Human Behavior*

Steppe bison (*Bison priscus*) were an important species for interior Alaskan subsistence economies during the late Pleistocene and early Holocene, but the locations of preferred bison habitat areas, seasonal movement patterns, responses to environmental change, and other behavioral factors remain largely unexplored in Alaskan archaeology. This study applies strontium, oxygen, and carbon isotopic analyses to 14 sequentially-sampled and AMS radiocarbon dated steppe bison teeth from two locales in the Yukon-Tanana Uplands in order to reconstruct steppe bison behavior on a seasonal basis. This study is the first of its kind for a prehistoric species in Alaska, and the dataset encompasses both glacial and interglacial periods, which has allowed for behavioral comparisons between different climatic periods. The results suggest that bison behavioral ecology changed as climates warmed during the Pleistocene-Holocene transition, and climate change may have been the driving force behind the eventual extinction of steppe bison. These results are discussed with regards to how bison seasonal movement patterns, as well as longer-term behavioral changes, may have affected human settlement and subsistence patterns during the late Pleistocene and early Holocene in Alaska.

[124] Chair

Glasscock, Mike [91] see Myers, Emlen

Glatz, Claudia [12] see Casana, Jesse

Gleason, Matthew (Worcester Polytechnic Institute) and Adam Watson (Worcester Polytechnic Institute)

[214] *Deciphering Bone Tool Production and Use: A Comparative Assessment of Quantitative Approaches to Microwear Analysis*

Recent research in the precolumbian Pueblo southwest has demonstrated the importance of understanding trends in bone industries that closely track other, related economic sectors such as perishable craft production. A vital next step in this line of inquiry is the identification the specific types of production activities in which bone tools are employed and variation across time and space. As illustrated by the results of this pilot study, texture analysis methods, developed within the mechanical engineering discipline, show great promise for advancing the study of bone tool manufacture and use. This paper attempts to locate the most promising locations on the tool for measurement and analysis of use wear, while exploring the differences between traditional roughness measures, and multi-scale geometric analysis using area-scale fractal techniques for characterizing and discriminating microtopographic differences as a function of tool use. The scales of the use-wear and the tool Multi-scale analyses provide characterizations with greater potential for useful and confident discrimination than the traditional methods.

Glover, Jeffrey [20] see Vaughan, Andrew

Glowacki, Mary**[99]** *The Head as the Seat of the Soul: A Medium for Spiritual Reciprocity in the Early Andes*

There are many visual representations spanning the different time periods of the ancient Andes, and corroborated by historic accounts, that point to man's spiritual essence as residing in the head, and more specifically, head hair. These examples suggest that this power was transferable and maintained the reciprocal balance between men, and the earthly and supernatural realm. This presentation briefly discusses the human head and hair in Andean belief as a conduit for the flow of spiritual power as documented in the archaeological, ethnographic, and historic record. The data suggest that such movement of energy was fundamental to maintaining the equilibrium in life—a balance in social ties and relations, resources, political control, and supernatural interactions, as broadly conveyed in metaphor. In recognizing this concept, scholars may better interpret what is found in the archaeological record tied to this basic Andean principal.

Gnivecki, Perry L. [222] see Berman, Mary Jane

Goar, Toni [66] see Kerr, R. Stanley

Goebel, Ted [69] see Keene, Joshua

Goebel, Ted (Texa A&M University) and Joshua Lynch (Texas A&M University)**[242]** *Late Glacial Climate Change and the Dispersal of Humans to Beringia: An Ecological Model*

New studies of ancient as well as modern human genomes suggest that the immediate ancestors of Native Americans began to disperse from greater northeast Asia to Beringia after the last glacial maximum, roughly 20,000 cal B.P. These new data require us to reconsider the lengthy incubation period predicted by the Beringian standstill model as well as the place of the Yana RHS site in our understanding of the peopling of Alaska. In this paper, we review the climatic, paleoenvironmental, genomic (human as well as other important mammal species), and archaeological records of eastern Siberia and Beringia to develop an ecological model of human dispersal. Did climate and environmental change during the early part of the late glacial encourage rapid northward expansion of human populations? How did human adaptations 20,000–13,000 cal B.P. further condition dispersal across the Bering land bridge to Alaska?

Goepfert, Nicolas [45] see Espinosa, Alicia

Goff, Sheila [289] see Santarelli, Brunella

Gokee, Cameron [17] see Wright, Alice

Gokee, Cameron and Matthew Kroot (Skidmore College)**[177]** *Relocate, Aggregate, or Fortify?: Exploring Local Responses to Atlantic Era Entanglement in Southeastern Senegal*

The sixteenth–nineteenth centuries in west Africa marked a period of dramatic social and cultural change fueled, in part, by the opening of Atlantic markets and the rise of predatory states. The responses of societies peripheral to these political economic processes often involved strategic shifts in the production of space—including relocation to highland refuge areas, aggregation into larger villages, increases in residential mobility, and fortification of elite houses and/or entire settlements. In this paper, we compare historical and archaeological evidence to model the ways in which physical and social dimensions of landscape shaped, and were shaped by, these strategies in the Senegambia and elsewhere across west Africa. In so doing, we also consider the interplay between these spatial strategies and local constellations of power and authority. Applying this model to preliminary data from our archaeological research in southeastern Senegal, we offer some hypotheses about the origins of socio-spatial relations among the Bedik, Peul, and Malinke communities living today in this region.

Gold, Claire [187] see Mires, Ann Marie

Gold, Jacob**[262]** *One Foot in the Field and the Other in the Forest: Indigenous "State Hedging" in Cambodia and Beyond*

This essay uses a comparative approach to investigate the practice of "state hedging" deployed by various peoples moving in and out of the margins of large-scale historical states. Among these peoples are the Kuy ethnic group whose communities in north-central Cambodia have invited me to study them

as their traditional forests rapidly disappear. Kuy methods of "state hedging" and the outcomes of pursuing this practice will be compared with the use of similar tactics by peoples in Africa and the Americas. Investigation of "state hedging," I believe, can shed light on under-appreciated facets of both early and more recent complex tropical states, including the advantages of tactical pluralism on the part of those states. It can also reframe the debate over the meaning of "agency" and "marginality" on the part of less-complex indigenous state-hedgers.

Golden, Charles (Brandeis University), Andrew Scherer (Brown University), Whittaker Schroder (University of Pennsylvania) and Clive Vella (Brown University)

[59] *Decentralizing the Economies of the Maya West*

Many reconstructions of precolumbian Maya economies are based on a centralized model of exchange, in which major capitals acted as import and export hubs and centers of production, while royal courts provided some form of management for long-distance trade networks. Research in the western Maya Lowlands, and particularly the Usumacinta River Valley, suggests that although during the Classic period (A.D. 250–810) powerful dynastic centers like Piedras Negras, Yaxchilan, and their neighbors functioned as significant nodes in trade networks, the networks themselves were maintained by hinterland elites. These elites functioned as critical allies for the royal courts and must have provided goods and services to those courts. But hinterland sites were also centers of production in their own right, with exchange networks that did not always intersect with those of the royal center. Hinterland elites pursued their own ambitions and sought local economic benefits that sometimes diverged from the best interests of the courts. In this paper, we present the results of research in the hinterlands of Yaxchilan and Piedras Negras, and consider these data in light of a decentered model of Classic Maya economies.

Golden, Patrick [261] see Rabinowitz, Adam

Goldfield, Anna (Boston University), Ross Booton (University of Sheffield) and Teresa Steele (University of California, Davis)

[80] *Cost Thresholds and Differential Resource Exploitation Behavior during the Middle and Upper Paleolithic in Southwest France*

"Specialization" and "generalization" are used as descriptors for Paleolithic subsistence behavior, particularly when differentiating the Middle and Upper Paleolithic. These terms, however, dichotomize and obscure the complexity of subsistence decision-making. Instead, it is more productive to investigate whether Neanderthals and anatomically modern humans (AMH) differed in their perception of thresholds of cost versus gain in processing food. These thresholds are points beyond which the investment of further time or energy is wasted. I highlight two subsistence thresholds relevant to both AMH and Neanderthals: bone fat extraction and the use of fire. Exploiting a carcass for marrow and grease yields rapidly diminishing returns. Fire is a costly resource to acquire and maintain. Higher cost thresholds for AMH may have been an adaptive advantage in glacial periods of the Paleolithic. I present methodology for exploring differences in bone fat exploitation by Neanderthals and AMH, using a case study that applies this methodology to faunal assemblages from the Quina Mousterian (Chez Pinaud Jonzac) and the Aurignacian (La Ferrassie) from southwest France. I then present a modeling approach to fire use in the Paleolithic that predicts implications of different intensities of fire use for cooking on the competitiveness of Neanderthal and AMH populations.

Goldstein, Lynne [30] see Steponaitis, Vincas

Goldstein, Lynne (Michigan State University)

[48] *Discussant*

Goldstein, Paul (UC San Diego)

[219] *Tiwanaku Colonization in Historical Context—Directed, Diasporic or Daisy Chain? Evidence from Moquegua, Locumba, Azapa*

The expansion of Tiwanaku civilization is the earliest example of large-scale demographic colonization under an Andean state. Between the seventh to eleventh centuries C.E., household, mortuary, and settlement archaeology attest to large migrant populations of altiplano Tiwanaku cultural affiliation who established permanent residence and governance in the western oasis valleys of Moquegua, Locumba, Sama, Caplina, and Azapa. However, the regional historical context of this demographic colonization is not resolved. What does the dating, diversity, and distribution of Tiwanaku settlement tell us about the timing, point(s) of origin and direction of Tiwanaku expansion? Was there "state colonization," socially engineered and mobilized through the intervention of one mediating center, as with Inca mitmaquna? Was the process entirely diasporic, with each Tiwanaku colonial stream the direct enclave of a distinct source community? Or did Tiwanaku colonization "daisy chain" over time, from initial provinces like that of Moquegua to secondary and tertiary colonies in a peripatetic refugee resettlement process that outlasted the state itself? New systematic survey data from the key intermediate Locumba Valley (2015–16) are compared with settlement patterns from full coverage pedestrian surveys of the Moquegua (1993–98) and Azapa (1991–92) valleys to shed new light on the regional history of Tiwanaku colonization.

[74] *Discussant*

Golitsko, Mark [149] see Cercone, Ashley

Golitsko, Mark (University of Notre Dame), Ethan Cochrane (University of Auckland) and James Goff (University of New South Wales)

[296] *Coastal Development and Palaeoenvironment on the North Coast of Papua New Guinea: The Paniri Creek Sequence*

Pleistocene-Holocene environmental variance in the southwestern Pacific plays a critical role in explaining the human settlement potential of islands, and their respective settlement histories. In particular, prevalence of viable ecological niches for human settlement on the northern coast of New Guinea has likely fluctuated due to a combination of eustatic and tectonic factors that may have constrained the size of human populations living there as well as its potential as a route of movement between ISEA and the remote Pacific islands at times. We examine a long-term record of coastal development at Paniri Creek, a location now 14 km inland from which near-coastal deposits and human remains were recovered during the 1920s. Our new analysis of the Paniri sequence indicates a complex sequence of environmental change spanning the late Pleistocene to mid-Holocene, including potential palaeo-shore deposits. Implications of observed changes in coastal morphology and environment are discussed in relation to the regional archaeological record as currently understood.

Gomani-Chindebvu, Elizabeth [211] see Nightingale, Sheila

Gomez, Sergio [129] see Mejia Ramon, Andres

Gómez, Emmanuel [154] see Grave, Alfonso

Gómez García, Yajaira (UNIVERSIDAD NACIONAL AUTÓNOMA DE MÉXICO)

[136] *Indicadores arqueológicos de talleres de cerámica en las unidades habitacionales de Cacaxtla-Xochitecatl*

En las excavaciones realizadas en el 2011-2012 de las unidades habitacionales del periodo Formativo en la terraza VII el Proyecto Arqueológico El hombre y sus recursos en el Valle Puebla-Tlaxcala registraron 42 formaciones circulares, 9 hornos y 3 concentraciones de materiales diversos en un área de 802 m².

En esta ponencia se van a exponer el análisis de los materiales encontrados en el área y en el interior de dichas formaciones para explicar sus funciones y su relación con los hornos.

Con el análisis del material y del contexto se propone la posible producción artesanal alfarera en donde las formaciones circulares se utilizan como espacios para almacenar cerámica. Las unidades habitacionales del periodo formativo, excavadas en temporadas anteriores han presentado diferentes áreas de actividad lo que ha permitido reconstruir la vida cotidiana de sus pobladores, en esta ocasión la posible producción de cerámica forma parte de estas actividades cotidianas.

Gomez-Gastelum, Luis (Universidad de Guadalajara)

[154] *Cerámica atoyac inciso de la cuenca de sayula, jalisco. Aproximaciones a su iconografía*

En esta ponencia se describe y analiza la cerámica denominada Atoyac inciso, propia de la cuenca de Sayula, ubicada en la región sur del estado mexicano de Jalisco. Se trata de una manifestación propia de la fase epónima de la región, misma que se ubica entre los años 500 y 1100 d.C. La intención es observarla no sólo como un producto cerámico, sino como un fenómeno social de importancia en la época. Así, se discuten sus contextos, con la finalidad de ubicarla como un producto asociado con las élites de la localidad. Luego se hace una descripción de sus motivos decorativos, buscando encontrar los patrones que pudieran tener. Por último, se efectúa un primer acercamiento iconográfico de los mismos, para prefigurar los mensajes que existieron en esta cerámica como parte de un sistema de comunicación entre élites regionales y al interior de la sociedad sayulteca del periodo en cuestión.

[154] *Discussant*

[154] *Chair*

Gómez-Puche, Magdalena [72] see Lozano, Sergi

Gonciar, Andre [24] see Bethard, Jonathan

Goni, Rafael (Instituto Nacional de Antropología/UBA)

[94] *Extensification in Archaeology*

The concept of extensification was used in an ethnographical sense, particularly by L. Binford (2001). It was deeply related with the new organization of American hunter-gatherers when horses were introduced in the continent by European people. The main examples to introduce this concept were the Great Plains societies in North America and the Tehuelche society in Patagonia, South America.

However, the use of the concept of extensification in an archaeological perspective is not very usual. Furthermore, its definition is not very clear; more related with its opposition, the concept of intensification; a term more well defined and used in Archaeology.

In this presentation, the main purpose is to clarify this concept in terms of its use in an archaeological example of southern Patagonia. Also, the example takes into account a case of European precontact, previous to the introduction of horses in the Tehuelche society. The use of Binford's frame of references, like environmental information and Effective Temperatures (ET), were a useful tool to identify cases of the process of extensification in the study area.

Gonlin, Nan (Bellevue College)

[107] *Midnight Madness in Mesoamerica: Dark Doings in the Ancient World*

After the sun went down, the world of ancient Mesoamerica was transformed into a dark landscape. Some sought sleep while others came alive for nocturnal naughtiness. Ancient Mesoamericans simultaneously embraced and respected the dark. Are nightly practices destined to remain obscured from our view, or can we illuminate such dark doings by expanding our focus from daily practices to include those of the night? A fundamental question explored in this paper is the extent to which there is material evidence for what ancient humans did at night using ancient Mesoamerica as a case study. Nighttime has left its mark on the archaeological record and we hope to shed light on this auspicious time of day through the exploration of several different types of evidence and various cultures. Tasks of nightly living differed from those of the day. Ritual activities permeated the darkness and cosmological beliefs constructed ancient conceptions of night and day. The nightly practices of ancient Mesoamericans were rich with meaning and transcended time and space.

[32] *Discussant*

[107] *Chair*

Gonlin, Nancy [40] see Williams, Justin

Gonzales, Cristina [93] see Hankins, Sharon

Gonzalez, Albert (Cal State University - East Bay), Heather Atherton (Environmental Science Associates) and Javier Hernandez (Dudek Environmental and Engineering Consulting)

[110] *Beyond Missions: Documenting Mexican and Mexican-American Adobes in California*

In the foreword to their 1931 review of nineteenth-century adobe houses in California, historical architects Donald Hannaford and Revel Edwards express despair at the state of such research in their time, noting that "printed material on the subject" could only be generated via discovery in the field. Eighty-five years later, research is still lacking. California's famed colonial missions tend to draw the bulk of archaeological attention while research associated with Mexican- and Gold Rush-era adobes sits largely in the hands of conservation specialists, amateur historians, and national, state, and local parks personnel. To be fair, much work has been accomplished in the hands of the latter. However, the problem statement as presented by Hannaford and Edwards still holds: since the level of study and publication remains largely local and avocational, data associated with Mexican- and Gold Rush-era adobes is not readily available in all or even most cases, making comparative study difficult. We aim to remedy the situation, facilitating the comparative study of nineteenth-century California adobes by developing a comprehensive database documenting their condition, comparable attributes, and associated research. This poster presents the preliminary results of that effort, highlighting several emerging comparative studies in the process.

Gonzalez, Juan [200] see Skowronek, Russell

Gonzalez, Sara (University of Washington, Seattle)

[266] *Field Methods in Indigenous Archaeology: Building Capacity through Community-Based Research and Education*

There are few formal field schools in the United States where students can receive formal training in tribal historic preservation, community-based collaboration, and archaeological field methods. Given the increasing role of consultation and collaboration in disciplinary practice, learning to effectively communicate and build relationships with a Tribal Historic Preservation Office (THPO) and/or tribal community is a critical skill. The Confederated Tribes of Grand Ronde Community of Oregon's THPO and the University of Washington have thus partnered to develop Field Methods in Indigenous Archaeology, a summer field school that offers both Grand Ronde community members and undergraduate students hands-on training in tribal historic preservation and archaeological field methods. This program is an example of the ways in which community-based, indigenized approaches to archaeological research and undergraduate education contributes to the capacity of the Grand Ronde THPO: 1) to care for tribal heritage on reservation and trust lands, and 2) to educate the next generation of heritage managers and archaeologists—tribal and non-tribal—about what it means to care for tribal cultural resources.

[203] *Moderator*

Gonzalez, Juan (The University of Texas Rio Grande Valley) and James Hinthorne (The University of Texas Rio Grande Valley)

[279] *Polished Edge Stone Tools from the Gulf of Morrosquillo, Caribbean Coast of Colombia, Evidence of an Advanced Lithic Industry*

Highly polished edge stone tools occur in large numbers all along the Gulf of Morrosquillo's coastal plain on the Caribbean Coast of Colombia. Despite the remarkably large quantities of stone tools and the impressive craftsmanship they display, they have gone unnoticed by archaeological surveys. In an area where the geology is dominated by a thick sequence of marine sedimentary rocks, the presence of stone tools made from high grade metamorphic and igneous rocks suggest that these were likely imported as finished products. This study reports on an assemblage of over 200 edge stone tools found by farmers at or close to the ground surface and as such lack chronological and cultural contexts. A combination of mineralogical analysis of a representative suite of tools using non-destructive XRD, an assessment of the degree of surface weathering and comparisons with museum collections, are used to argue that the majority of these elaborate tools were made by the Tairona people. The Tairona inhabited the southern and western flanks of the Santa Marta Massif, 250 km to the north between 800 and 1600 A.D. Production at a large scale and a well-organized distribution system are required to rationalize the large volume of lithic tools.

González, Sergio [97] see Romano, Francisco

Gonzalez Lauck, Rebecca

[178] *On the Question of Olmec Architecture and Sculpture Beyond the Gulf Coast*

For over half a century, the ancient city located in La Venta, Tabasco, has served as a standard in defining what is commonly referred to as Olmec in the time period between ca. 1000–400 B.C. This paper will examine the architectural and sculptural vestiges in sites that have been defined as Olmec outside the Gulf Coast heartland, in order to define the component(s) that define it as "Olmec," as well as to explain the differences observed.

Gonzalez-Macqueen, Felipe (University of Toronto), Giles Spence-Morrow (University of Toronto), Peter Bikoulis (University of Toronto), Willy Yépez Álvarez (Royal Ontario Museum) and Justin Jennings (Royal Ontario Museum)

[205] *A New Methodology for Geoglyph Research: The Drone and Satellite Imagery Survey of the Sihuas Valley, Peru*

Throughout the twentieth century, archaeologists have used aerial photography to record and study geoglyphs and other large features. This method, however, has its limitations like expense, flying time, and image resolution. With the addition of satellite imagery and drone photography into the archaeological toolbox, we can now obtain higher resolution images of variable landscapes. We conducted a preliminary survey of a section of the Sihuas Valley, Peru, in order to better understand the landscape surrounding the Middle Horizon–Late Intermediate site of Quicapampa (A.D. 600–1400). To identify and map geoglyphs and other anthropogenic features scattered across this area of desert pampa, we used a combination of satellite and drone imagery that were then integrated into a GIS setting. Initial satellite image reconnaissance allowed us to locate some of the most visible geoglyphs, providing target areas for subsequent field study using drone photography and pedestrian survey. The results of this preliminary survey showed that each drone pass revealed a significant amount of information neither visible solely by satellite imagery nor easily comprehensible by observers on the ground. While not an exhausting survey, this study demonstrates how a combined satellite/drone/pedestrian survey methodology can provide accurate, detailed imagery of past landscapes.

Gonzalez-Morales, Manuel

[170] *Lawrence Straus on Palaeolithic Art: How to Marry Art and Adaptation?*

As a great specialist in Palaeolithic Archaeology of the Old World, and also a superb connoisseur of the painted and engraved caves of France and Spain, Professor Straus had to deal with the problem of fitting the evidence of Palaeolithic "art" in the general adaptive framework of the processual Archaeology he was practicing along his professional career. In this presentation, I want to analyze the evolution of his thinking about this topic, as a reflection on the general theoretical problems involved in the relationship between symbolic representations and the everyday life of prehistoric social groups.

González-Sobrino, Blanca [236] see Aguirre-Samudio, Ana

Gonzalez-Tennant, Edward (University of Florida)

[221] *Cyberfeminism, Virtual Worlds, and Resisting the Feminization of Digital Archaeology*

In feminist technoscience, feminist technologies are those which are good for the oppressed. Cyberfeminists view online worlds as one such technology; although many question how they can support social transformation. The answer to this dilemma for many cyberfeminists requires that we resist embedding new technologies with entrenched hierarchies of power. After a brief review of how hierarchical thinking is embedded in some familiar technologies, I examine the possibilities virtual technologies hold for creating experiences and narratives which challenge dichotomous and hierarchical views of the past. New technologies allow us to interact with past landscapes, inhabit the bodies of others, and even explore the surface of new worlds. Will these technologies support hierarchical tendencies, or can we affect a new paradigm? What is archaeology's role? Digital archaeology can help shape the use of these technologies as they relate to heritage, community, and identity. In order to realize this goal, our discipline needs to resist the feminization of digital archaeology. I end the paper with a frank discussion of how our discipline can avoid maligning technological methodologists. This includes drawing inspiration from potentially surprising places, including the intersection of video games and popular culture.

Goodman, Steve [223] see Boivin, Nicole

Goodman Elgar, Melissa (Washington State University) and Amanda Logan (Northwestern University)

[177] *Earthen Dwellings from Banda, Ghana: Geoarchaeological Analyses of Archaeological and Modern Structures*

West African earthen architecture is among the most elaborated in the world as recognized by the World Heritage site status of Asante buildings at Kumasi. However, its history is poorly known. This study begins to redress this gap by employing bulk sediment analyses and soil micromorphology to characterize building remains recovered at the Ngre Kataa site, in Banda, Ghana, and a contemporary earthen compound in the region. The study was conducted in tandem with archaeological and paleoethnobotanical studies in the region which included excavation of superimposed fifteenth to seventeenth century occupations and regional ethnoarchaeological studies. Here, we consider the technical choices revealed by construction material properties. We found a broad range of material practices identified in the archaeological materials, which appear to be dramatically simplified over time. We consider reasons for continuity and change in these technical practices with reference to socioeconomic and political shifts over the last five centuries.

Goodmaster, Christopher (Versar, Inc.) and Erin Helton (Resource Data, Inc.)

[168] *Paleolandscape Reconstruction and Modeling in the Lower Pecos River Valley*

The Lower Pecos River valley in southwestern Texas provides an ideal location for the development of a three-dimensional landscape reconstruction using modern geospatial methods, including LiDAR and digital photogrammetry. The goal of this project is to create a scientifically accurate, high resolution, prehistoric landscape model of a portion of the Lower Pecos Valley, an archaeologically-rich region that has experienced widespread modifications to the natural landscape during the historic period. The development of such a model will provide an accurate context for the myriad of prehistoric sites in the area and contribute to landscape-scale analyses of the social, economic, and ritual aspects of prehistoric life in the region.

Goodwin, Whitney [27] see Kovacevich, Brigitte

Goodwin, Whitney (Southern Methodist University), Kacy L. Hollenback (Southern Methodist University), Fern Swenson (State Historical Society of North Dakota) and William C. Hockaday (Baylor University)

[115] *Changing Foodways in Culture Contact Contexts on the Northern Great Plains: Lipid Residue Analysis at the Double Ditch Site, North Dakota*

Disentangling drivers of technological change and continuity in culture contact situations is complex. In the northern Great Plains, earthlodge village groups are reported to have abandoned traditional ceramic containers for certain tasks by the early nineteenth century. The veracity of these observations is confounded by other contact situation processes, such as epidemics, which also impacted ceramic production and use. Ethnoarchaeology has documented the use of particular vessel types exclusively for particular food types when new materials, such as metal containers, are introduced. But these changes occur based on assessments of performance characteristics of new and old objects and preferences of the people who use them. Did Mandan groups stop cooking meat in ceramic containers as reported in historic texts? If so, how widespread was this change across space and time? What other driving processes need to be considered? To track changes in cooking practices of earthlodge village groups in culture contact contexts, this pilot research analyzes ceramics and their associated sediments from the Double Ditch site, North Dakota, for lipid signatures, with the goal of developing a protocol for a broader study examining changes in ceramic use in protohistoric and historic period Mandan villages.

Goodwin, Joshua (University of Florida)

[133] *From Pots to Pits: Ritual Use of Waterbirds on the Northern Gulf Coast of Florida*

The archaeological record of Hopewell cultures of the eastern Woodlands demonstrates the ritual importance of birds in the form of effigy pipes, copper and mica cutouts, and mortuary vessels. Bird motifs continue to be prevalent beyond the Hopewell period in peninsular Florida, during Weeden Island times (A.D. 200–900), when representations of waterbirds, among other avian taxa, appear on pottery, often in the form of effigy vessels. Because of their ability to traverse worlds—air, land, and sea—waterbirds may have been accorded special significance in Weeden Island cosmology. In this paper, I consider the extent to which cosmology goes beyond material representations of birds to involve ritual protocols for the handling and deposition of the skeletal remains of waterbirds. Recent excavations at Shell Mound (8LV42), on the northern Gulf Coast of Florida, yielded hundreds of skeletal elements identified to several species of waterbirds from a single silo-shaped pit feature. Given the spatial and temporal relationship of Shell Mound with a Weeden Island mortuary facility (Palmetto Mound) and the relationship of the faunal contents with recurring iconographic characters of this time period, this paper proposes that the presence of waterbird elements in the context of such pit features represents ritualized deposition.

Goodyear, Albert C. [8] see Meer, Kelsey

Goodyear, Albert (SC Institute of Archaeology & Anthropology), I. Randolph Daniel, Jr., Christopher Moore and David Anderson

[159] *Paleoindian Responses at the Younger Dryas Boundary: A Case Study from the Carolinas*

The onset of the Younger Dryas stadial is thought to have occurred during the Clovis Period. The cause of the Younger Dryas and the near simultaneous disappearance of the Clovis techno-culture in North America continues to be a set of events that are not well understood. Debates exist regarding the cause of the Younger Dryas and its possible affects on climate, plants, and animals, as well as humans. The archaeological record stands apart from these disciplines as an independent source of data and possible insights. Archaeological studies in the Carolinas are providing compelling evidence regarding Clovis settlement systems and demography and the immediately succeeding post-Clovis fluted point period. During Clovis times, two geographically separate but adjacent macro bands are thought to have existed in North and South Carolina, respectively. In the immediately following time period defined by instrument-assisted fluted points (Redstones), projectile point frequency drops dramatically and territorial ranges contract. Significant technological change also exists between Clovis and Redstone points. During this period, a possible travel way running along the Fall Line from near Raleigh, North Carolina, to the Savannah River suggests that some cultural connections between the former Clovis macro bands still existed.

Gopnik, Hilary (Emory University)

[87] *Grounded: A Late Bronze Age Fortress on the Şerur Valley floor, Naxçıvan*

The Middle to Late Bronze Age transition in the South Caucasus is generally characterized by a shift from small settlements and elaborate kurgan burials to hilltop fortresses and smaller burials grouped in cemeteries. It has been argued that the hilltop fortresses with their broad view over the landscape served as anchors to the mobile populations that surrounded them, and ultimately to the development of increased social hierarchies at these fortresses. This pattern has been identified primarily in Armenia and Georgia while evidence from the south in Naxçıvan has been largely absent. In 2014 and 2015, the Naxçıvan Archaeological Project undertook excavations on the Şerur Valley floor in an area that had been deeply cut into by an earlier Soviet bulldozing operation. These excavations revealed a sequence of Middle Bronze burials and ritual deposits directly topped and cut into by a Late Bronze elite building with large rooms and a buttressed cyclopean fortification wall—essentially a ground-level citadel. This presentation will present the results of these excavations and will suggest that this sequence will force a reconsideration of the processes that created the fortress based polities of the Late Bronze to Early Iron Ages.

[87] *Chair*

Goralski, Craig (Cypress College) and Alexis Gray (Norco College)

[187] *Can We All Get Along? Bridging the Divide between Forensic Anthropologists, Forensic Archaeologists, and Law Enforcement Personnel*

Despite being stakeholders with many shared goals, the working relationships between forensic anthropologists, forensic archaeologists, and their colleagues in law enforcement are often strained. The authors argue that cultural differences among the groups have contributed to the underuse and misuse of forensic anthropologists and archaeologists both in the United States and elsewhere, resulting in investigations that are neither as anthropological nor as scientific as juries and the public are led to believe. In the fall and winter of 2015, an anonymous online survey was given to forensic anthropologists, forensic archaeologists, and law enforcement personnel. Respondents were asked to assess levels of anthropologist/archaeologist/law enforcement cooperation based on their own personal experience and asked to identify common ways that disparate backgrounds, training, culture, and communication have impacted this cooperation. They were asked how each stakeholder group contributed to forensic cases and whether that contribution was adequate, appropriate, and effective.

This paper will summarize the survey responses and highlight trends in the data. It will assess why and to what extent strain exists among forensic anthropologists, forensic archaeologists, and law enforcement personnel. Finally, we'll discuss the extent to which these issues can be resolved and suggest directions for the future.

Gorczyk, John

[80] *Key Human-Animal Interactions in Neolithic Southeastern Europe: New Faunal Evidence from Bulgaria*

Southeastern Europe has always played an important role in the story of the spread of Neolithic lifeways from the Near East into Europe. At times, it has been seen as a bridge, barrier, or mosaic (Tringham 2000). As essential components of the "Neolithic Package," animals have been critical to the telling of this story. The availability of zooarchaeological data for the Neolithic in southeastern Europe has been uneven over the years, with some countries enjoying more coverage than others. Bulgaria lies at the heart of the Balkan Peninsula and is home to some of the more spectacular developments related to the spread of Neolithic lifeways. This paper presents new faunal evidence from several early and late Neolithic sites in Bulgaria and examines how our current understanding of the animal bone data stands in relation to some of the long-standing research questions in Bulgarian prehistory. In so doing, it reevaluates these issues within a social zooarchaeological framework, arguing that animals are constituents of Neolithic society, and that viewing them as such will have fundamental implications for the way zooarchaeology is practiced in the future.

[80] *Chair*

Gordon, Gwyneth [135] see Marsteller, Sara

Gore, Kathy [195] see Snow, Meradeth

Goring-Morris, Nigel (Hebrew University) and Anna Belfer-Cohen (Hebrew University)

[52] *"Off with Their Heads": Skull Removal in the Prehistoric Near East*

While there is a huge difference in every aspect of existence between simple human societies, i.e., hunter-gatherers and complex ones, i.e., industrial groups, the head is always considered as the residing place of the essential part of what defines 'us' as rational human beings at the individual level. One may thus assume that this was the case also in prehistoric times, which at least partially explains the special treatment of heads that one can observe through millennia, from the pre-agricultural societies of the Natufian (beginning ca. 15,000 years cal B.P.) through the end of the Neolithic period (ca. 7,000

years cal B.P.) in the Near East. Indeed, this custom is one of the few clear-cut examples bridging between the prehistoric pre-agricultural, early agricultural, and even pastoral societies throughout the region. We shall attempt to place this practice within a broader perspective, trying to see how and why it continued through the turbulent times of changing lifeways occurring at the Paleolithic–Neolithic transformation.

Gosner, Linda [147] see Smith, Alexander

Goudge, Charlotte (University of Bristol)

[280] *Discoveries in Hatteras: European and Native American Cultural Contact and Assimilation*

Excavations at the early contact Native American site on Hatteras Island, Outer Banks, North Carolina, has yielded an incredibly varied material culture that displays all aspects of early Native/European contact in the area. Our collection of newly discovered early European expansion period artefacts, found at the Cape Creek site, a major Croatoan town and trade hub, hints at intense contact between the natives and the first European settlers. This paper is the first academic release of results from the Dig: Hatteras excavation on Buxton Island in the Outer Banks, pointing to the spread of colonists influence some 50 miles southeast of the settlement on Roanoke and strongly hinting at not only contact but possible cultural assimilation with the Natives. This paper will discuss our data as well as methodological approaches to a complicated site of great cultural importance.

Gould, Peter

[71] *On the Case: Methodology in Public Archaeology*

Public engagement by archaeologists has become well-entrenched in the ethics codes and practice of the profession. Specialized journals now present reports on public and community archaeology projects, usually in the form of individual case studies. However, the growing number of public archaeology projects been accompanied neither by the development of standard practice methodologies nor by a tradition of assessment of project outcomes against defined objectives. As a result, the self-reflective project and program evaluation common in other social science fields is largely absent in public archaeology. While it is true that public engagement with archaeology is contingent on the local context, the same is true in disciplines such as political science or education, where methodology and outcome evaluation are priorities. This paper draws upon an analysis of the papers published since inception in the journal *Public Archaeology* to illustrate the issues. It then proposes a case-study methodology derived from the international relations field as an alternative approach to evaluating and reporting the results of public archaeology projects. Finally, the author's application of this methodology to research in communities in three countries provide a working example of the value of taking a more structured, hypothesis-driven approach to public engagement projects.

Gourichon, Lionel [146] see Rendu, William

Graff, Emily Elizabeth (School of Anthropology, University of Arizona)

[103] *Troia's Three Roman Ladies: The Analysis of Three Cases of Trepanation at Necrópolis de Calderia (Setúbal, Portugal)*

The Necrópolis de Calderia contains nearly 200 burials spanning from the first through fifth centuries A.D. The cemetery is located on the western edge of the ancient Roman site of Troia, which is considered the largest fish salting, garum production, and distribution center in the Roman world. Among the inhumations, three cases of trepanation have been identified. The three individuals are adult women. Trepanation, also known as trephination or craniectomy, is the surgical practice in which a portion(s) of the cranial vault is permanently removed from the skull of a living individual. This form of medical intervention was often used to treat headaches, cranial trauma, and neurological disorders such as epilepsy according to several ancient sources. Trepanation also has been associated with ritual and magical practices, however, the cultural and social purposes of trepanation are difficult to archaeologically discern. The three individuals appear to have not only survived the procedure but also endured multiple episodes of trepanation. This paper discusses the analysis of Calderia's trepanned individuals and medical practices of the western Roman Empire.

Grafft-Weiss, Amber J. [260] see Bennett, Sarah

Graham, Elizabeth (Institute of Archaeology)

[26] *Exchange and the Economy over Time*

Exchange drove Maya economy at many levels, yet the political landscape changed dramatically from the Preclassic to early Colonial Period. How did exchange networks respond to these changes? Or, we might ask instead if political change or upheaval was instigated by fluctuations or upsets in what might be called the market economy and those who sought to manage or control networks of supply? Did the ability to exact tax/tribute provide rulers and nobles with the economic power to invest and benefit from markets and trade, or did the tax system become unmanageable and problematic in terms of the economic power wielded by tax receivers? These questions clearly cannot be answered in full, but hypotheses will be suggested and avenues explored with particular attention to the Classic to Postclassic transition.

Graham, Martha (SRI Foundation)

[30] *Seeking Balance: The Role of the Review Committee in NAGPRA Implementation*

As part of the Native American Graves Protection and Repatriation Act (NAGPRA), Congress established the NAGPRA Review Committee, and gave it formal responsibilities covering various critical aspects of NAGPRA's implementations. In establishing the Review Committee, Congress sought to "ensure a balance between differing viewpoints among Native Americans, museums, and scientific organizations." This paper considers the Review Committee's involvement in NAGPRA and the important roles that the Society for American Archaeology played in support of fulfilling Congress's mandates and intent for NAGPRA and the Review Committee.

Graham, Elizabeth [262] see Isendahl, Christian

Grant, David [185] see Burchell, Meghan

Grávalos, M. Elizabeth [219] see Hubert, Erell

Grávalos, M. Elizabeth (University of Illinois at Chicago), Patrick Ryan Williams (The Field Museum), Lauren Monz (Northwestern University) and Erell Hubert (University of Toronto)

[219] *An Obsidian Stone Tool Workshop at Cerro Baúl?: Wari Provincial Craft Production and Political Economy*

Here, we present a preliminary chaîne opératoire analysis of obsidian stone tools and associated debitage recovered from a single architectural compound at the site of Cerro Baúl. As the only known direct interaction sphere of the prehispanic Wari and Tiwanaku empires, research at Cerro Baúl in the Moquegua Valley, Peru, offers a rare perspective of colonial encounters and intertwined political economies. During the 2015 excavation season, we exposed a dense midden context consisting of various obsidian lithics, including large bifaces in the typical Wari style, projectile points, retouch flakes, and cores. Although previous researchers have recovered obsidian stone tools at Cerro Baúl, these have largely consisted of finished ritual objects bearing little sign of wear. This discovery is the first evidence of on-site obsidian lithic production. Our chaîne opératoire approach permits a closer look at elite production practices within the context of a potential Wari provincial obsidian workshop. Through this analysis, we highlight the trade networks and local craft specialization of an expansive prehispanic state situated in a colonial frontier.

Grave, Alfonso (INAH Sinaloa) and Emmanuel Gómez (INAH Sinaloa)

[154] *La cerámica Aztatlán de Sinaloa y Nayarit*

Desde la excavación de Gordon Ekholm en Guasave en 1941, se consideró a la cerámica Aztatlán como una importación del centro de México. Algunos como el propio Ekholm y Hasso Von Winning mencionaron la posibilidad de que artesanos Mixteco-Poblanos hayan venido a enseñar su arte a los primitivos habitantes de la costa nayarita y sinaloense. Otros, más medidos como Clement Meighan; Charles Kelley; Helmut Publ, Beatriz Braniff y John Pohl hablan de sistemas mercantiles de largo alcance e incluso se ha mencionado la palabra pochteca. Para la mayoría ha quedado en una influencia directa y unidireccional del Centro de México ó Oaxaca, hacia la zona nuclear Aztatlán.

Sin embargo, para quienes hemos trabajado en la llanura costera de Sinaloa y Nayarit en los últimos veinte años, nos parece claro que la cerámica Aztatlán es el resultado del propio desarrollo político y económico de los grupos que habitaron estos lares e incluso en la cerámica de la fase Baluarte del sur de Sinaloa se encuentran ya varios de los diseños que serán comunes en la cerámica Aztatlán; incluyendo algunos motivos iconográficos. ¿Cómo fue el proceso que propició la cerámica Aztatlán en el Posclásico?

Gravel-Miguel, Claudine (Arizona State University)

[72] *Analyzing Magdalenian Social Networks in their Environmental Context*

This research argues for a refocus of the study of prehistoric social networks that involves contextualizing the inter-site links often interpreted as indicators of social interactions between different groups. It focuses on the social networks created during the 3 sub-periods of the Magdalenian in the Cantabrian region, and visible through similarities of portable art representations. It uses Species Distribution Modeling and Maximum Classification Likelihood on faunal presence data to reconstruct prehistoric biomes and to contextualize the networks reconstructed through the art analysis. It demonstrates the potential of mapping the recreated networks onto the reconstructed biomes and of identifying the linked sites' foraging and minimal band territories to distinguish between a single group's local mobility and inter-group social alliances. Looking at the differences in contextualized networks over time also allows understanding human-environment interactions, and how these affected human social organization in the Upper Paleolithic.

Graves, Tim [55] see Miller, Myles

Gravlin Beman, Ashley (Florida Atlantic University)

[163] *Ceramics, Migrations and Ethnic Identity at the site of Cosmapa Oriental, Department of Chinandega, Nicaragua*

In the summer of 2015, we analyzed ceramics recovered from the site of Cosmapa Oriental in the municipality of Chichigalpa, Department of Chinandega, Nicaragua. The research design calls for the investigation of ethnic identity and migratory processes through the identification, description, and sequencing of the ceramics. Ceramics were recovered from one 1 x 2 m pit, eight stratigraphically excavated shovel tests, and various surface collections. The pottery was analyzed using the Type: Variety-Mode system, with attention paid to chronologically sensitive modes, such as forms. Two occupations were identified: an earlier Late Preclassic one containing Usulután groups and types; Santa Tecla Red; and Pinos Black-brown. This occupation is closely linked to the Uapala and Verbena-Arenal ceramic spheres in nearby El Salvador. The later component, which dates from the Terminal Classic to the Early Postclassic period, includes Ulúa polychrome (Santana Class, Bilbao subclass), Las Vegas Polychrome, and one or two sherds of Plumbate. The local pottery associated with the later occupation is brown to buff, soft, friable, and tempered with local volcanic grit. Red and black slips are common. Because of its location, we believe the site represents the Colonial Period settlement of Mazatega, and therefore was a Maribio settlement.

Gray, Jena (College of William & Mary)

[19] *The People Behind the Practice: An Ethnological Encounter with a Maya Forest Gardener*

In recent years, alternative subsistence strategies have been explored by archaeoethnobotanists and others to describe ways in which the ancient Maya managed their land. Through a contextualized analysis of contemporary Maya interaction with their environment, ethnobotanists hope to gain insight into the past. Forest gardening, a sustainable, agroforestry system similar to permaculture practices, offers a glance into how the Maya cooperate with the land. This paper seeks not to provide an interpretation or comparison of contemporary to ancient Maya peoples but rather to illuminate an experience with Maya forest gardening within the jungles of western Belize.

Through pairing a recent personal account with the academic field of archaeoethnobotany, this paper will entertain the intrinsic link between plants and the people who cultivate and use them. Explored within this text are the cultivation, medicinal uses, and food usages of cacao, life-everlasting plant, and the breadnut tree. Additionally, this presentation offers a brief portrayal of specific Maya ideologies and philosophies that lie behind their land management practices in order to better and more adequately understand the people behind their practice.

Gray, Nadine [93] see Hyde, David M.

Greaves, Russell (Peabody Museum, Harvard) and Karen Kramer (Department of Anthropology, University of Utah)**[279]** *Ethnoarchaeology of Residential Mobility among Savanna Foragers and Archaeological Site Formation*

Ethnoarchaeological observations of residential mobility provide crucial links between subsistence activities, landscape use, social behaviors, and archaeological visibility of occupations. Pumé foragers of the Venezuela llanos move their camps up to six times a year. They occupy separate wet and dry season main camps that are the hubs of central place foraging for different seasonal resources. Pumé hunter-gatherers also make temporary camps for fishing, raw material acquisition, and to cultivate small amounts of manioc that complement foraging for wild tubers. Shifting between wet and dry season camps follows changing groundwater levels, and movement to a main seasonal camp can involve up to three temporary moves determined by water availability. Architectural differences between each of the main seasonal camps are dramatic, and social re-organization occurs during each camp occupation event. Wet season camps are re-used up to three sequential years, but dry season camps shift every year. Observations based on 30 months of ethnoarchaeological research among mobile Pumé foragers in a hyperseasonal savanna provide a longitudinal view of residential dynamics. These are examined in relation to characteristics of the archaeological record to develop methods for integrating distinct kinds of residential sites representing diverse hunting and gathering seasonal activities.

Greco, Catriel [259] see Cremonese, Maria

Green, Jennifer (Florida Atlantic University) and Nicole Pezzotti (Florida Atlantic University)**[6]** *Using Species Richness To Examine Paleoenvironmental Conditions Of The Northern Everglades: A Preliminary Faunal Analysis Of Wedgworth Midden (8PB16175) And The Bryant Site (8PB46)*

The Wedgworth Midden Site (8PB16175) is a newly identified pop-up tree island site southeast of Lake Okeechobee, in Belle Glade, Florida. It is the last stratified muck site to be excavated in Palm Beach County since Belle Glade Mound in 1977. The site presents with cultural occupations from the Late Archaic into the Woodland Period and is considered a part of the Belle Glade Culture.

We compared Wedgworth to the nearby Bryant Site (8PB46) specifically because the ceramic types present at the sites indicate that they were occupied or used contemporaneously. The ceramics also indicate that these people had closer ties to cultural groups from the northeast than other groups throughout the state.

Analysis of the invertebrate remains show both apple snails and the Florida Spike were present at Bryant but not nearly in the numbers found at Wedgworth. Wedgworth even contained apple snail pits, which have only been encountered at five sites throughout south Florida. The vertebrate species assemblage was similar at both sites. However, at Bryant there was a larger presence of brackish and saltwater species. Additionally, the level of fragmentation of the vertebrate remains was extensive compared to those at Wedgworth.

Green, Kelly (University of Sheffield)**[25]** *Children and the ceramic Industry in Medieval England*

This paper discusses the role of children in the ceramic industry in medieval England, using the work of medieval ceramics specialists Maureen Mellor and Stephen Moorhouse as a starting point from which new evidence relating to this subject can be assessed. Children's involvement in pottery production manifests itself in a variety of ways, including fingerprints on ceramic sherds, decorative qualities on pots and tiles, and documentary references. Similar studies relating to pottery production in Roman, post-medieval, and contemporary European societies provide context through which the evidence for medieval England can be analysed. As such, this paper draws on a range of ethnographic and documentary evidence to inform our understanding of the archaeology of child labour in the sphere of pottery production in the English Middle Ages, with a particular focus on the later part of this period. It will be shown that children formed a significant (if not always highly visible) part of the work force in many domestic-based industries, and that play formed an important component through which children learned various tasks relating to ceramic production.

Green, Debra (Metcalf Archaeological Consultants, Inc.)**[50]** *Landscape Change at the Ceremonial Center of Tibes in Puerto Rico: A Late Holocene Hurricane Flood Event?*

This paper presents the results of a geoarchaeological study of the depositional history at the Ceremonial Center of Tibes in Puerto Rico.

Geoarchaeological study of the sediment and soil relationship at Tibes reveals evidence of Holocene paleoflooding that occurred between A.D. 800 and A.D. 900. This flood event caused significant changes to the cultural landscape at Tibes. These site formation processes include river migration farther west and south of the paleochannel, deposition of reworked fluvial fine-grained sediments, cobbly gravel deposits, and cultural material across the western portions of the site; and destruction of older cultural deposits and ceremonial features. The results of this study offer a comparative analysis of flood events recorded at other archaeological sites in Puerto Rico and the Caribbean.

Green, William (Logan Museum of Anthropology, Beloit College) and Roland Rodell (University of Wisconsin-Rock County)**[258]** *"The Wisconsin Idea" and the Production of Archaeological Knowledge during the Progressive Era, ca. 1900-1930*

The social and political ferment of the Progressive Era (1890s–1920s) was associated with a golden age in Wisconsin archaeology for avocational and professionals alike. In 1901, a group of archaeological enthusiasts led by Charles E. Brown founded the Archeological Section of the Wisconsin Natural History Society. The Section soon became the independent Wisconsin Archeological Society (WAS). Its promotion of the "scientific and educational value" of archaeology was meant to engage "scientists, educators and students everywhere"—"students" denoting anyone interested in archaeology. As curator of the State Historical Society of Wisconsin (SHSW) museum, Brown brought archaeology to the forefront of the SHSW's statewide historic preservation and public education programs. Simultaneously, professional anthropology came to the Milwaukee Public Museum (MPM) when Samuel A. Barrett was hired in 1909, and MPM archaeological fieldwork flourished through the 1920s with an ambitious excavation program directed by Will C. McKern. The MPM program, and especially Brown's leadership in the WAS and SHSW and his association with the University of Wisconsin Extension Division, engaged both professionals and avocational archaeologists in the Wisconsin Idea, a concept born of the Progressive Era in which academic research addresses societal needs and reaches citizens throughout the state.

Green, Kirsten (University of Montana), Ashley H. McKeown (Texas State University) and Roseanne Bongiovanni (University of Southern Florida)**[288]** *Tracing Mortuary Trends at Cahal Pech using Stable Isotope Data*

Recent research focusing on environmental change in the Belize River Valley during the Classic Period provides clear evidence for deteriorating conditions during the Late Classic Period. These findings help explain shifts in socio-political and religious systems, as well as fluctuations in population distributions of the Late Classic and Terminal Classic Maya. Some archaeological research suggests complete abandonment of ceremonial sites occupied by the Maya elite. Mortuary practices can be used to identify changes in the socio-political and religious systems of the living population, and this paper employs archaeological and biological data from burials at Cahal Pech, a medium-sized ceremonial site in San Ignacio, Belize. Specifically, stable isotope values from bone and teeth will identify geographic origin and diet/status of burials from the Late Preclassic to Terminal Classic periods, including intrusive burials that occurred after central ceremonial structures were abandoned. Integrated with other biological data and burial context, these data will be employed to discern whether Cahal Pech was occupied during the Terminal Classic, albeit by a much smaller population, or was used primarily as a ceremonial burial site during this time.

Greene, James (Cardno, Inc.), Veronica Parsell (Cardno, Inc.), Kaye Grobe (Cardno, Inc.) and Kathleen Settle (Cardno, Inc.)

[111] *Kankakee Marsh Lifeways, Phase III Data Recovery, Northwest Indiana*

Site 12LA0091 represents a unique archaeological setting in northwest Indiana. Located south of Lake Michigan on a sandy dune remnant situated topographically above the historic Kankakee Marsh, this prehistoric site has yielded invaluable information in understanding regional prehistoric subsistence activities from the Late Archaic to Upper Mississippian periods. A recent Phase III data recovery effort has provided data that can help refine the prehistoric chronological framework for northwest Indiana, as well as provide information on prehistoric seasonal activities within the Kankakee Marsh region over time. Through lithic, ceramic, faunal, and flora analysis, this investigation provides greater insight into the temporal sequencing of the region. Additionally, the presence of intact human remains provides insight into burial practices specific to the Kankakee Marsh area. This investigation has not only generated additional information important for understanding the prehistory of the region, but also represents a successful example of the positive outcomes that can be achieved through the Section 106 process.

Greene, James [287] see Parsell, Veronica

Greenfield, Haskel [112] see Redmond, Brian

Greenlee, Diana (U of Louisiana - Monroe) and Stephanie Perrault (Poverty Point World Heritage Site)

[265] *Collections-Based Research at Poverty Point World Heritage Site*

The Poverty Point World Heritage Site is a state-owned and -managed archaeological park in northeastern Louisiana. Named for the nineteenth-century Poverty Point Plantation, the site's cultural significance derives from its monumental earthen complex constructed 3,700–3,100 B.P. The complex includes five mounds; six enormous, concentric, semi-elliptical ridges; and a large interior plaza. A sixth mound was built 1,700–2,000 years after the initial construction. This culturally created landscape, the largest and most elaborate Archaic Period settlement in North America, was built by hunter-fisher-gatherers.

The Poverty Point Archaeological Curatorial Facility has an immense collection of artifacts, numbering in the hundreds of thousands, associated with the Late Archaic occupation of the site. The remarkably diverse cultural material available for study includes (but is not limited to) PPOs, decorative earthen objects, figurines, pottery, spear points, microliths, atlatl weights, gorgets, plummets, stone vessels, and beads. Much of the lithic raw material was imported from sources hundreds of miles away. The artifacts are the products of a vast surface collection and numerous excavation units that were placed in the major earthen features across the site. There is an on-site dormitory for researchers and the location is ideal for those who seek a workplace with few distractions.

Greer, John [115] see Greer, Mavis

Greer, Mavis (Greer Services, Archeological Consulting) and John Greer (Greer Services, Archeological Consulting)

[115] *Use of Old Photos in Rock Art Recording and Analysis: The Adams Collection of Central Wyoming*

Historic photographs are particularly useful in rock art studies for assessing early and changing site conditions that show effects, rates, and chronology of natural weathering and vandalism. This includes such alterations as removed and added figures, altered figures, entire affected panels, chalking, latex recording, and deleterious effects of well-intentioned physical conservation. Such changes indicate not only physical changes in the art but also influence on possible direct dating and modern conservation measures. Care should be taken to evaluate available data relative to use of old photos for a variety of information.

Grier, Colin [124] see Dolan, Patrick

Grier, Colin (Washington State University)

[132] *Terraforming, Monumentality and Long Term Practice in the Coast Salish World*

The archaeological record of the southern Gulf Islands of coastal British Columbia provides evidence of deliberate and long-term construction of coastal landforms over the last 4,500 years. Local landscapes were altered, modified, and managed in the service of production, but the implications of such practices for the construction of place, of inequality, and of political networks are profound. I document the magnitude and extent of landscape construction spatially, focusing on quantifying investments in coastal spit sites from the southern Gulf Islands. I also address the temporal scale of this landscape construction process, which, while fundamentally long term, also appears to have been punctuated by shorter term moment of contestation and reorganization. My overarching objective is to better establish how material production, social inequalities, and political autonomy played out over deep time, and refine notions of how ownership systems can emerge from the construction of built places.

[132] *Chair*

Griffith, Cameron (Hanover College) and Nikolai Grube (Universität Bonn)

[294] *Subterranean Sculptural Narratives of Ancient Maya Mythological Beliefs*

In this paper, we present recent analyses conducted on the elaborate artwork in Actun Halal, an important ancient Maya cave site in western Belize. Actun Halal contains a wide variety of art forms, ranging from monumental modified speleothem sculptures 4 meters in height to small, detailed bas-relief sculptural works executed in layers of travertine only millimeters thick. Akin to the elegant scenes rendered in murals and on polychrome pottery vessels, the sculptural works in Actun Halal tell a vibrant story with prominent actors in ancient Maya mythology such as the Fire God and the Jester God. The research presented here details our most recent insights into this complex sculptural narrative.

Griffiths, Seren (University of Southampton), Erick Robinson (University of Wyoming, USA), Philip Buckland (Umeå University, Sweden), Ralph Fyfe (Plymouth University, UK) and Kevan Edinborough (University College London, UK)

[218] *The 8.2ka Event Evidence for Human-Environment Interaction in North-West Atlantic Europe*

The 8.2ka 'event' is represented by significant cooling in multi-proxy palaeoenvironmental records (e.g., Alley et al. 1997; Kobashi et al. 2007; Thomas et al. 2007; cf. Wiersma 2008). This temperature drop, and its related consequences, has been presented as factors in human social changes across Europe and the Near East (e.g., Roberts et al. 2011; van der Plicht et al. 2011). However, given the complexity of regional and local ecosystems, the impacts across broad geographical scales were likely variable, and possibly, time transgressive. Moreover, the time range of the signal in Dye3/GRIP/GISP2 records have been estimated by Rohling and Palike (2005) as indicating long-term cooling over 400–600 years. In order to address influences of climate change on human societies, archaeological case studies need to address the temporal and spatial context of environmental changes over the span of the 'event,' but for several hundred years either side to better understand possible leads and lags in responses. This case-study presents one approach, assessing the evidence for human activity, and pollen and beetle records either side of the 8.2ka 'event' in northwest Atlantic Europe. Specific attention is paid to problems of chronological resolution in archaeological and palaeoenvironmental data, and chronological data treatment.

Grimes, Vaughan [85] see Harris, Alison

Grimes, Vaughan (Memorial University), Rui Boaventura (University of Lisbon), Ana Maria Silva (University of Coimbra), Maria Hillier and António Carlos Valera (NIA - ERA Arqueologia S.A.)

[103] *Strontium Isotope Evidence for Late Neolithic Mobility in South-Central Portugal*

During the end of the fourth and third millennia B.C.E. (Late Neolithic/Chalcolithic) in South-Central Portugal significant movement of people has been assumed due to the widespread distribution of 'foreign' artefacts found at coastal and inland archaeological sites. Counter to this, other archaeological evidence from the region seems to suggest a more sedentary lifestyle among these people at that time. Here, we will present human strontium isotope data from three Late Neolithic tombs, namely the dolmens of Estria and Caravelos (n=14) near Lisbon (Estremadura), and the tholos tomb 1 at Perdigoões (n=27) in Alentejo, to directly address the scale of mobility vs sedentary behavior during the Late Neolithic. Our initial results suggest that in comparison to measured isotopic baselines using contemporary archaeological fauna, over 20 percent, of humans from all three sites investigated could be considered non-local, which may indicate a greater level of inter-regional mobility during the Late Neolithic than previously anticipated.

Grimstead, Deanna (The Ohio State University) and Barnet Pavao-Zuckerman (University of Maryland)

[176] *Historical Continuity in Southern Arizona Free Range Ranching Practices: Carbon, Oxygen, and Strontium Isotope Evidence from two 18th Century Missions*

Carbon ($\delta^{13}\text{C}$), oxygen ($\delta^{18}\text{O}$), and strontium ($87\text{Sr}/86\text{Sr}$) isotopes from cattle, caprine, and small mammal teeth from two historic-period Spanish missions and modern cattle were assayed with the goal of reconstructing historic ranching practices in the Sonoran Desert of southwestern North America. Carbon isotope ratios from modern cattle indicate that it is possible to distinguish cattle free ranged within upper elevations desert habitats compared to lower elevation free ranged or possibly foddered animals. It is not possible to distinguish maize-foddering versus low elevation free-ranging of livestock in the Sonoran Desert using $\delta^{13}\text{C}$. Historic-period livestock indicate they were free ranged at upper elevations, lower elevations, and/or foddered, and several specimens show evidence of a mixed strategy. Oxygen isotope ratios ($\delta^{18}\text{O}$) suggest that missions managed water resources for livestock use, and were, for the most part, kept away from riparian zones. $87\text{Sr}/86\text{Sr}$ results demonstrate trade was an important part of Mission ranching practices, as several specimens are non-local; coming from a minimum distance of 40 km, but more likely greater than 150 km. Taken together, the $\delta^{13}\text{C}$, $\delta^{18}\text{O}$, and $87\text{Sr}/86\text{Sr}$ results are consistent with continuity in free-ranged herd management practices from the historic Mission era to present day within the Sonoran desert.

Grinnan, Nicole [260] see Scott-Ireton, Della

Grinnan, Nicole (Florida Public Archaeology Network)

[260] *Submerging the Public: Perspectives on Developing Guided Archaeological Shipwreck Tours*

Community interest in archaeological shipwreck sites is increasingly profound in Florida. Though laws protecting these submerged cultural resources in state waters have been in place for nearly 30 years, many people are still unaware of the importance of these resources as heritage tourism destinations, foci of archaeological research, and representatives of community identity. After award of a grant to explore the sixteenth-century Spanish Emanuel Point II shipwreck in 2014, the University of West Florida (UWF) Division of Anthropology and Archaeology began considering new avenues for providing public engagement built around a preservation message. This paper explores the recent development of the "PAST (Public Archaeological Shipwreck Tours)" diving program. PAST allows FPAN and UWF archaeologists to offer local recreational divers an opportunity to learn more about shipwreck sites (like the Emanuel Point shipwrecks) and participate in guided dive tours. Reflections on the program include a discussion of the successes of initial PAST events, participant feedback, and plans for the future.

Grobe, Kaye [111] see Greene, James

Groff, Amanda (University of Central Florida) and Tosha Dupras (University of Central Florida)

[24] *Leprosy, Segregation, & Burial Context: Remote Desert Living in the Dakhleh Oasis, Egypt*

Stable oxygen isotope analysis of tooth enamel and bone apatite from adults afflicted with leprosy from the Kellis 2 cemetery (50–450 A.D.) in the Dakhleh Oasis provides insight into social perceptions of disease stigma during the Roman-Christian era in Egypt. Because there are no grave markers found in Kellis 2, this research focuses on the spatial analysis of stable isotope results to develop an interpretation of the burial location of leprosy cases. In

particular, stable oxygen isotopes, which have been used to interpret migration and/or place of origin, are utilized to address the segregation of leprosy cases in a burial context. Two primary questions are addressed in this study: 1. Did the physical manifestations of leprosy cause the afflicted to be segregated from the general public?; and 2. Was the Dakhleh Oasis used as a safe haven or place of banishment for the ill? Results of this study indicate that foreign individuals with leprosy were primarily confined to one location in the cemetery, indicating segregation did likely occur. However, we argue that while the ill may have been segregated, their appearance in the cemetery is likely related to the naturally occurring alum mineral used for healing.

Gronenborn, Detlef (Roemisch-Germanisches Zentralmuseum), Hans-Christoph Strien (Johannes Gutenberg University Mainz), Christian Lohr (Roemisch-Germanisches Zentralmuseum) and Johanna Ritter (Johannes Gutenberg University Mainz) (Helmholtz-Centre Geesthacht for Materials and Coas)

[95] *Adaptive Cycles and Resilience as Explanatory Templates for the Formulation of Coupled Climate-Culture Models*

Simplistic scenarios of the role of climate on the dynamics of socio-political trajectories are increasingly being replaced by coupled models in which climate and societies undergo mutually influential interactions. The concepts of adaptive cycles and resilience have been particularly helpful in understanding these interrelations.

Based on an extensive body of data from Early to Upper (Young) Neolithic sites in western central Germany and adjacent regions, a model is proposed, which takes into account both the potentially beneficial as well as the adverse influences of climate. These parameters are then set against markers of social resilience, which at times forms independently, at times dependently, from climate fluctuations. The result is a complex basic module for a coupled climate-culture interaction model which may eventually be taken as a template for mathematical modelling.

[95] *Chair*

Gronniger, Grace

[111] *Setting the Table in Victorian Age St. Louis: The Utility of Glass Tableware Analysis in the Archaeology of Domesticity and Consumerism*

The historical archaeology of domesticity and consumption rests heavily on the analysis of ceramic tableware artifacts. Few archaeologists have seriously incorporated analyses of glass tableware into this body of research, even though glass tableware was a common, durable, and heavily marketed domestic artifact class. My research addresses this problem through a study of glass tableware from Victorian Age (1830s–1900s) residential sites in St. Louis, Missouri. This is done, in part, by adapting methods of historic ceramic artifact analysis to the analysis of historic glassware. The utility of this method is assessed by applying it in a historical archaeological study of household consumption in relation to domesticity in Victorian age St. Louis, Missouri. The results indicate that whether it is used independently or in conjunction with ceramic analysis, glass tableware analysis can contribute significantly to the historical archaeology of domesticity and consumerism. Archaeologists can do this painlessly by using the method developed and applied in this study, rather than continue to miss out on the potential contributions of this artifact class.

Grooms, Seth [111] see Flood, John

Grouard, Sandrine (Muséum National Histoire Naturelle Paris)

[222] *Island Extinctions and Invasions: Archaeozoological Advance in the French West Indies*

Although island faunas are relatively well studied, there are few clear examples on faunal replacement, over periods of several centuries or a few millennia. This paper brings together results from 10 years of zooarchaeological studies in three different Caribbean islands: Saint-Martin, Guadeloupe, and Martinique. It presents data on presence (and absence) of terrestrial vertebrates (amphibians, reptiles, birds, and mammals), in relation to human activities in insular environments during the Holocene. Examples illustrate mechanisms of biodiversity evolution under human pressure and through several waves of human migration since 5,000 years B.P. These include natural colonisations, intentional or chance introductions, extinctions or disappearances (often of endemic species) due to human activities (hunting and gathering, but also deforestation and other anthropogenic effects on the environment). Beginning with the large original diversity, there is a partial turnover of the taxa within each human colonisation. Everywhere, human intervention causes an over-saturation of the specific richness curve in regard to the MacArthur and Wilson Model, because of the numerous species introduced during each migration; but in parallel, there is extinction of numerous indigenous and endemic species.

[14] *Discussant*

Grouard, Sandrine [100] see Perdikaris, Sophia

Groucutt, Huw [22] see Brandt, Steven

Groucutt, Huw (University of Oxford)

[22] *Arabian Late Pleistocene Lithic Variability and Its Implications for Hominin Behavior and Demography*

The last five years have seen a rapid acceleration in research on Late Pleistocene Arabia. A growing number of Late Pleistocene archaeological sites have now been identified. While Pleistocene hominin fossil remains are currently unknown in Arabia, a fast expanding corpus of faunal remains and paleoenvironmental archives provide important contextual information for hominin occupations. Claims have been made for close similarities between Arabian and broadly contemporary east and northeast African lithic assemblages. Such analyses have, however, lacked chronological resolution and little consideration has been given to the different environmental and landscape contexts of sites. In this paper, I focus on lithic assemblages from open air sites in Arabia, as both surface scatters and excavated material, and seek to differentiate the various sources of variability influencing the morphological and technological features of the assemblages. Identified sites fall into two major types: raw material procurement localities, and scatters associated with paleohydrological features (particularly lakes). While the emerging picture suggests significant roles for autochthonous Arabian developments and 'pragmatic' influences such as differential reduction intensity, it also seems clear that several dispersals into Arabia occurred. Understanding the sources and routes of these dispersals is proving an exciting, but challenging, area of research.

[22] *Chair*

Grube, Nikolai [294] see Griffith, Cameron

Gruber, Janna [140] see Bowman, R Doyle

Grund, Brigid (University of Wyoming), Todd Surovell (University of Wyoming) and Spencer Pelton (University of Wyoming)

[115] *Where the Buffalo Groan: Topographic Variables Governing the Placement and Spatial Organization of Wold Bison Jump, Wyoming*

The Wold Bison Jump in Johnson County, Wyoming, is one of many prehistoric, mass kill sites scattered across the Plains. At Wold, a foraging basin of prime ungulate grazing habitat abuts the gently sloping backside of a bluff. Funnel-shaped drivelines of cairns extend across the top of the bluff towards a treacherous cliff. The drive was configured to constrain stampeding bison (*Bison* sp.) as prehistoric hunters communally drove them from the foraging basin to the precipice. Previous GIS analyses of bison jumps inductively analyze surrounding landscapes by classifying jump locations as known, unvarying focal points of analysis. While this approach can be informative, at Wold we attempt to obtain a more general understanding of how bison jumps operate. Using iterative models of least cost paths, topographic cross-sections, and visibility analysis, we test which landscape-embedded variables are optimized at Wold as compared to other potential localities across the study area. We find that this site's placement is primarily explained by minimizing the distance at which the cliff face is visible and secondarily by minimizing the cost of slope and curvature routes ascending into the drivelines. Our procedure could hypothetically be used to predict optimal jump locations on similar landscapes.

Grundtisch, Katie [171] see Kohler, Tim

Grupe, Gisela [52] see Schulting, Rick

Guderjan, Thomas [130] see Krause, Samantha

Guderjan, Thomas (University of Texas at Tyler)

[130] *Did Restructuring at the End of the Maya Classic Period Include the Beginnings of Private Land Tenure?*

The archaeological study of land tenure in non-literate societies is methodologically complex. However, by examining situations before, during, and after transitions, insight can be gained. At the end of the Maya Classic Period, complexes of field walls were built, especially in coastal locations. These appear to not have water control or land management functions but instead delineate space similarly to house lots in contemporary, but traditional, Maya villages. Land tenure at the center of Blue Creek in Belize, specifically the Chan Cahal residential group, coastal field wall complexes and the use of house perimeter walls in the Yucatec village of Yaxunah are compared to better understand the purposes and importance of the development of field walls in understanding changing patterns of Maya land tenure.

Gudino, Alejandra [57] see Lippi, Ronald

Guengerich, Anna (Vanderbilt University)

[105] *The View from Above: Changing Experiences of the Built Environment during the Andean Late Intermediate Period*

The highland Andes underwent major transformations in settlement organization between A.D. 1000–1300, in the first half of the Late Intermediate Period. Settlement patterning shifted to higher altitudes, and in some areas, new sites were accompanied by defensive features. Most research has focused on the structural pressures that led to these changes, such as an increase of violence in the wake of Middle Horizon polity collapse, or a shift to pastoralism as a result of climate change. This paper focuses instead on how these changes in the built environment were experienced after their construction. Settlements in many regions shared newly developed attributes such as stone masonry, freestanding domestic architecture, and communal ritual spaces that were relatively small in scale and often ancestor-focused. Focusing on architectural changes developed in the Chachapoyas region during this time, I suggest that these new built environments generated fundamentally different forms of habitus for their residents and radically altered the relationships that communities sustained with each other and with the powers that inhabited the landscape. Stone-built, mountaintop villages of the LIP may have originated as adaptive responses, but their spatial and material attributes also shaped new understandings of their inhabitants' place in society and in the animate cosmos.

Guenter, Stanley [59] see Hansen, Richard

Guerra, Rafael (Institute of Archaeology), Claire Ebert (The Pennsylvania State University) and Jaime Awe (Northern Arizona University)

[288] *Architectural Planning and Shared Political Traditions in the Belize River Valley*

The presence of shared architectural elements and configurations between major ancient Maya centers has often been attributed to socio-political affiliation and/or emulation of influential centers by their neighbors. In this paper, we examine the site plans and settlement systems for the monumental centers of Cahal Pech and Lower Dover in the Belize Valley to identify parallel trends of the growth of monumental architecture through time. Cahal Pech is one of the earliest permanently settled sites in the region (1200 cal B.C.), and experienced continual growth of monumental architecture and settlement until the Terminal Classic Maya "collapse" (~cal A.D. 800). The site core of Lower Dover, established later during the Late Classic Period (~cal A.D. 500), exhibits similar configuration of architectural elements as Cahal Pech, including an east-west spatial orientation. While the location of residential settlements at each site may have been ecologically dependent, similarities in the placement of public and private spaces at the elite centers of each site suggest that Lower Dover was closely tied to Cahal Pech, perhaps sharing a common socio-political lineage.

Gugora, Ariana (Department of Anthropology, University of Central Florida, Orlando, FL 32816), Tosha Dupras (Department of Anthropology, University of Central) and Erzsébet Fóthi (Department of Anthropology, Hungarian Natural Hist)

[147] *Childhood and Adulthood Mobility at Medieval (1240s A.D.) Solt-Tételhegy, Hungary Reconstructed from Stable Oxygen Isotope Analysis*

Between 2005 and 2009, archaeologists excavated more than 100 skeletons from the medieval (1240s A.D.) Hungarian site of Solt-Tételhegy. Little has been published about this archaeological settlement, and although previous stable isotopic research has described the migration patterns of medieval European peoples, here we present the first such study performed on a medieval Hungarian population. Stable oxygen isotope analysis was conducted on dental enamel from 23 individuals and on bone apatite from 21 individuals in an attempt to reconstruct origins and mobility from a life history perspective. The enamel and bone $\delta^{18}\text{O}$ values suggest that several of these individuals migrated to Hungary during their childhood. While the majority appear to have traveled from central and eastern Europe, a few originated from more distant places, such as Italy, Spain, the Middle-East, or even north Africa. This research adds to the understanding of the dynamic population movement throughout this time period in medieval Europe.

Guiducci, Dario (Université de Montréal)

[72] *Reading the Landscape: A Model of Environmental Legibility for Assessing Hominid Dispersals during the Late Pleistocene.*

The ability of Anatomically Modern Humans (AMH) to successfully navigate complex topographies and variable environments is hypothesized to have been a key adaptation for the long term success of our species, in comparison to other hominid groups. Additionally, the structure of the environment through which human dispersals occurred is arguably important to our understanding of the speed and scale at which population movements occurred. This paper demonstrates a new methodology for quantifying and modelling landscape legibility, an untested aspect of environmental structure adapted from landscape studies. With the aid of case studies from north-eastern Spain, this paper illustrates the logic of a legibility metric based on two dimensions; 1) landscape coherence, which affects the ability to single out significant landmarks useful for guiding navigation; and 2) ease of dispersability, measured by means of a circuitscape model. The paper concludes with a discussion of what the patterns and differences between the study areas mean for Late Pleistocene dispersals in the Western Mediterranean, and how an assessment of legibility fits in with other lines of evidence regarding hominid dispersals more generally.

Guinard, Adam [265] see Clauter, Jody

Guiry, Eric and Michael Richards (University of British Columbia)

[223] *Using Stable Isotope Analyses to Assess the Geographical Origins of Pork and Beef Products in a Historical New World Population Center*

This presentation explores the utility of stable carbon and nitrogen isotope analyses as a method for tracing the geographical origins of meat products from major livestock species. Samples (n= 250) from pigs and cattle consumed in the historical city of York, later renamed Toronto, in Canada are compared with animals raised in other areas, in both local as well as distant regions. Results show how cultural as well as environmental isotopic variables can be used to distinguish between animals raised in the city, the local region, or imported from the U.S. In particular, differences between the prevailing agricultural regimes in southern Ontario versus the eastern U.S. appear to provide a robust isotopic contrast in regional livestock and may be a useful marker of animals raised in and/or moved between different political and economic regions during the nineteenth century. We also use these data to reconstruct consumption patterns between different social and economic groups within the urban settings of Toronto and discuss these findings in the context of human translocation of animals and reshaping of ecosystems.

Gumerman, III, George J. [168] see Warren, Amy

Gunn, Joel D. [59] see Volta, Beniamino

Gunn, Christopher (University of Kentucky)

[127] *Seeding the Clouds: A Model of Late Classic Puuc Political Process*

This paper synthesizes the growing body of chronological, settlement, economic, epigraphic, and iconographic data generated from recent research to critically examine traditional models of a short Terminal Classic occupation for the Puuc. The Late Classic Period (600–800 A.D.) was the period in which the political and economic systems of Puuc states crystallized. Settlement patterns suggest that land was a widely available resource during the seventh century, but that the rapid infilling of the region over this century resulted in increased economic and political competition. Importantly, responses to this tension were regionalized, with western Puuc settlements choosing to minimize tensions through the formation of inter-elite confederacies, while eastern Puuc elites escalated inter-polity competition through increasing deployment of individualizing iconographic programs. In this way, the Puuc becomes a microcosm for broader political processes sweeping the Maya Lowlands in the decades leading to the Terminal Classic 'collapse.'

Gunn, Joel (University of North Carolina-Greensboro)

[162] *Three Tropical Thoughts: Vern Scarborough and the Migration to Tropical Ecology*

Vern's collaborative research fosters a number of insights both across investigators and disciplines. My top-three picks are tropical ecology, water cities, and Gulf Coast origin of Lowlands occupation. (1) Vern focuses on understanding implications of tropical ecology, central to which is high diversity and therefore low density. Working through the implications of this for human settlements has perhaps been his most important accomplishment. (2) Maya water cities are obvious attempts to break the bondage of tropical ecology. They mark both the strength of Classical Maya culture creating one of the great world civilizations, and a fatal vulnerability in their social engineering. While building dense, urban, commercial networks, they exposed themselves to extremes of climate typical of the boundary between the tropics and subtropics, among them long-term drought. (3) Finally, the first thing in Vern's writings that caught my attention was that Maya probably started conquest of the Lowlands from the Gulf Coast. Understanding this has been an objective since the 1990s. With the help of coastal ecologist John Day and William J. Folan, our study of the origins of civilizations with Sea Level Stabilization has brought the Gulf Coast hypothesis to fruition in the context of world-wide, low-density urbanism.

Gunter, Madeleine (College of William and Mary) and Christopher Stevenson (Virginia Commonwealth University)

[36] *Copper Exchange in Precontact Virginia: An LA-ICP-MS Study*

Research into broad patterns of trade and exchange in prehistoric North America suggests that from A.D. 800–1700, objects made from copper featured prominently in Native American exchange networks. Native polities saw copper as an insignia of social and economic power and sought to control its flow and distribution. Scholars have long hypothesized that prior to European contact in the Middle Atlantic region (A.D. 1607), Native polities in Virginia predominantly traded copper acquired from the Blue Ridge Mountains. This study tests this hypothesis, using Laser Ablation Inductively Coupled Plasma Mass Spectrometry (LA-ICP-MS) to compare the composition of copper artifacts and source material from a number of late prehistoric sites in Virginia.

Results of this analysis suggest that native copper likely came from sources well outside the Middle Atlantic region.

Gupta, Neha (Memorial University)

[4] *Chair*

Gurevitz, Anna (University of California, Merced) and Danielle Kurin (University of California, Santa Barbara)

[207] *Chanka Demographics and Diet: A Case Study in Commingled Remains from the South-Central Peruvian Andes*

Burial sites in the Peruvian Andes, especially around Andahuaylas, Peru, frequently consist of many commingled individuals. Most date from ca. A.D. 1000–1400, placing the individuals in a time of much turmoil as the Wari Empire collapsed and environmental constraints affected the region. This unrest resulted in an eruption of violence and a fight for resources, forcing individuals to restructure their identity. However, despite the plethora of human remains from this area, no ranges for sexing the commingled long bones exists for modern or prehistoric populations in Andean South America, which creates considerable challenges as we explore larger questions concerning identity and gender roles among the Chanka. Here, Chanka remains from Sonhuayo, a short distance outside of Andahuaylas, Peru, are examined to fill this lacuna. In addressing this gap, we initiate an investigation of how identity was restructured during a time of insecurity. Stable isotope analyses of bone collagen and tooth enamel as well as metric analysis of long bones, have allowed us to construct a demographic profile of the Chanka from Sonhuayo and correlate behavior to ideas of gender and identity as manifests in diet.

Gurstelle, Andrew (Wake Forest University)

[265] *Archaeological Collections at the Museum of Anthropology, Wake Forest University*

The Museum of Anthropology at Wake Forest University has several collections that are of great interest to archaeologists. Three of our collections are presented: the Rights collection, the Lam collection, and the West Mexican collection. The Rights collection consists of nearly 20,000 artifacts collected by the Rev. Douglas Rights in the first half of the twentieth century from archaeological sites near Winston-Salem and in the western Piedmont of North Carolina. The Lam collection consists of over 500 Chinese ceramics made during the Tang Dynasty (A.D. 618–907) at the Changsha kilns, including bowls, ewers, cups, teapots, small toys, and other pieces. The west Mexican collection consists of 1,040 artifacts, most dating to the Late Formative Period (approximately 300 B.C.–A.D. 400), and includes 162 complete ceramic vessels, ceramic figurines, greenstone beads and necklaces, obsidian projectile points, knives, and grinding stones. Though each of these collections were made outside of controlled, systematic archaeological investigations, they still hold great potential for contributing to new research.

Gusick, Amy (California State University, San Bernardino)

[249] *Discussant*

Gust, John [130] see Mathews, Jennifer

Gustafson, Martha [195] see Snow, Meradeth

Gustas, Robert (University of Alberta), Kisha Supernant (University of Alberta), Andrew Martindale (University of British Columbia), Bryn Letham (University of British Columbia) and Kenneth Ames (Portland State University)

[174] *Least Cost Analysis of Movement Events during the Early Holocene/Late Pleistocene on the Northwest Coast*

Spatial modeling of early prehistoric maritime movements on the Pacific Northwest Coast is important in contemporary archaeology as a site prospection tool in a landscape which has radically changed over the last 16,000 years. GIS analysis can model ancient site locations now hidden by changing sea levels. We present findings from a project which developed a new method for modeling maritime movement using least cost path analysis (LCA) of both behavioral and cultural constraints to determine the areas most likely to have been traveled by Paleoamericans between 10,000 and 16,000 cal. yr B.P. Using multiple cost weighting scenarios, spatial resolutions, and different considerations of overland travel movement, routes through five areas of northwest British Columbia and southeast Alaska were predicted. The resulting movement paths were systemically analyzed and locations with high probabilities of containing new sites identified. Additionally, a sub-model was run to test and check the methodology's predictiveness by comparing travel routes through Prince Rupert Harbour over the last 5,000 years to known site locations. This work is the first to apply LCA to seascapes and marine movement and the results have the potential to lead to a better understanding of Early Holocene and Late Pleistocene travel.

Guthrie, James [236] see Renson, Virginie

Gutierrez, Maria (CONICET, INCUAPA)

[16] *Integrating Bones, Soils and Dates: Late Pleistocene-Holocene Settings and Human Occupations in the Pampas of Argentina*

A great increase of archaeological knowledge from the Pampean region of Argentina occurred in the last 20 years. Three main approaches were explored in detail by means of archaeological research that contributed to broadening our understanding of hunter-gatherers in the past: interdisciplinary studies, geochronology, and taphonomy. These perspectives were either initiated or reinforced in our projects by Eileen Johnson. The aim of this presentation is to highlight the main contributions that these approaches have done to the archaeology of the region. Specifically, we will discuss the impact of her work on topics such as early human peopling, Pleistocene faunal extinctions and Holocene survival, and paleoenvironmental reconstruction.

[16] *Chair*

Gutiérrez-Zugasti, Igor [49] see Duarte, Carlos

Guyah, Timothy

[5] *Discussant*

Guzmán, Eulogio (School of the Museum of Fine Arts, Boston)

[172] *Discussant*

Gyucha, Attila [166] see Riebe, Danielle

H O'Rourke, Dennis [160] see Tackney, Justin

Haak, Wolfgang [276] see Llamas, Bastien

Haberle, Simon [223] see Clarke, Geoff

Haberle, Simon (Australian National University), Richard Cosgrove (La Trobe University), Asa Ferrier (La Trobe University), Patrick Moss (The University of Queensland) and Peter Kershaw (Monash University)

[295] *Light Islands in a Sea of Dark Rainforest: Human Influence on Fire, Climate and Biodiversity in the Australian Tropics*

The use of fire in Australian Aboriginal society has been well documented and has been pivotal to arguments about human impact on the Australian biota. Continuous and well-dated palaeoecological sequences from the humid rainforests of NE Queensland are beginning to reveal detailed records of vegetation transformation and shifting fire regimes within rainforest environments. The archaeological record is also providing new insights into plant exploitation and adaptation strategies to enable people to live within a rainforest environment. In this presentation, we combine archaeological and palaeoecological approaches to investigate the interaction between Aboriginal people, rainforest, and fire. The relationship between the intensity of human occupation, climate variability, and the onset of burning builds a better understanding of the primacy of natural and anthropogenic firing events and the Aboriginal maintenance of economically important plants within fire managed mosaics. It has also provided a greater understanding of the role of fire in the maintenance of biodiversity.

Habicht, Michael [224] see Bouwman, Abigail

Hackenberger, Steven [113] see Davis, John

Hadden, Carla (University of Georgia)

[28] *Building on the Vertebrate Data: Invertebrate Analysis Offers New Insights on Southeast Coastal Subsistence-Settlement Systems*

Mollusc shell is often the most conspicuous component of coastal archaeological sites in southeastern North America. The sheer abundance and bulk of the material presents logistical challenges during all stages of investigation, from excavation and recovery to analysis and curation. These challenges, combined with the assumption that molluscs were low-ranked resources, result in the tendency for zooarchaeological analyses of the coastal southeast to focus on vertebrate remains, and to exclude invertebrates. We argue that the benefits of systematic analyses of invertebrate fauna far outweigh the costs, and should be a routine component of zooarchaeological investigations, despite the challenges involved. We present data demonstrating how the analysis of shellfish remains has informed our understanding of coastal economies, site function, seasonality of site use, and procurement locations and catchment areas in the coastal southeast. These new insights significantly add to the models of resource use which are primarily drawn from vertebrate remains. Finally, we also offer some thoughts on mitigating the logistical challenges bulky shellfishes generate.

[28] *Chair*

Hadden, Carla [133] see Colaninno, Carol

Haddow, Scott D. [215] see Milella, Marco

Hadley, Dawn (University of Sheffield)

[25] *Growing Up on the Move: Childhood Experience in the Viking Age*

The involvement of children in the Viking Age migrations, and their experiences upon settlement in new regions, has been afforded little attention by archaeologists. In part this derives from the perceived paucity of evidence for children and their lives. It is also arguably because migration is generally overlooked as a facet of childhood because of an assumption that 'the home' is the environment in which childhood is experienced and thus this is where analytical attention is often focused. This paper will explore how we might begin to examine children in the context of Viking-Age migration, and will argue that a focus on children prompts some fundamental questions of the broad social processes that are central to the scholarly literature on migration, including acculturation, ethnogenesis, and conversion, which are routinely discussed purely with reference to adults. As Jane Eva Baxter has recently observed, 'culture is learned and not inherited, making studies of children and childhood among the most natural areas of interest for all anthropologists'; nowhere is this more relevant than to a period characterized by migration, in which the everyday lives of so many children were marked by mobility and instability, and a frequent need to renegotiate social norms.

[25] *Chair*

Haeusler, Werner [145] see Wagner, Ursel

Hageman, Jon (Northeastern Illinois U)

[270] *Making the MED: Building an Online Ethnobotanical Database*

Construction of the Mesoamerican Ethnobotanical Database (MED) began in 2010 and is wrapping up in 2016. The MED began as an informal collection of images for the use of one archaeological project and became an NSF-supported online reference for public use. Based on the collections of the Searle Herbarium and hosted by the Field Museum, this online searchable database contains images of over 2,500 plant vouchers, close-ups of reproductive plant parts, and seeds where available. Images are linked to basic botanical information for each voucher, and a review of over 40 ethnobotanical sources has yielded uses and common names. Creating the database involved considerations regarding sampling, equipment, time and labor, personnel, institutional, and data issues that were not obvious at the outset of the project nor (in some cases) as the project evolved. This paper describes many of the expected and unexpected hurdles that were overcome during the construction of the MED, and may be of interest to those constructing publicly available online databases in the future.

[270] *Chair*

Halbirt, Carl [8] see Taylor, Sarah

Halcrow, Sian (University of Otago, New Zealand), Nancy Tayles (University of Otago, New Zealand) and Gail Elliott (University of Otago, New Zealand)

[25] *The Bioarchaeology of Fetuses*

Until relatively recently, fetuses, along with infants and children, were largely overlooked in bioarchaeological research. Over the past 20 years there has been increasing recognition of the importance of research on immature individuals in the archaeological context. However, although fetuses are now sometimes included in analyses of population health and isotopic studies of infant weaning and diet in the past, most research focuses on postnatal individuals. This paper reviews some of the bioarchaeological research that has been undertaken in this area and starts to build a theoretical framework to conceptualize fetuses from an archaeological context and to identify areas for future research potential. We explore how the fetus is defined in the field, including discerning whether the fetus is in-utero or not, and terminological issues. We outline the contribution that the bioarchaeology of fetuses can make to understanding fertility and other demographic information of a population, epidemiology of disease, maternal and infant stress and the consequences of early stress on later life experience, and cultural or social aspects of personhood.

Hale, Nathan [164] see Cook, Jessica

Hallett-Desguez, Emily [177] see Steele, Teresa

Halley, Claire (University of Cambridge)

[47] *Hand in Hand: the Physical and Symbolic Representation of Social Bonding in the Prehistoric American Southwest*

A key theme of archaeological research in the American Southwest has been understanding the diverse ways people came together to form communities. This paper examines the physical and symbolic practice of forming social bonds through the practice of hand-holding in communal performance. Iconographic representations of hand-holding figures (on ceramic vessels and rock art) from the prehistoric period (A.D. 500–900) will be presented. These images provide an exceptional opportunity to explore the issue of community formation by considering the sensuous experience and symbolism encoded in these depictions. I review the physical properties of hand-holding. Bodily space boundaries are overcome when an individual takes the hand of another. Trust, confidence, and bonding are implied by this simple act. When the practice is extended to include additional individuals, participants must coordinate their bodily action with others. Individuals gain a feeling of inclusion and belonging to something bigger than themselves. I develop this interpretation by proposing that the concepts of community and integration are symbolically represented through characteristic stylistic tenets which underpin the depiction of hand-holding figures. In this interpretative framework, hands are generative and socially productive media through which concepts such as identity, integration, and social bonding are embodied and communicated.

Hallgren, Fredrik (Uppsala University, Sweden)

[52] *On the Ritual Display and Deposition of Human Skulls at Kanaljorden, Motala, Sweden, 8000 cal B.P.*

This paper discusses the ritual display and deposition of human skulls among hunter-gatherers in Scandinavia during the Mesolithic. The discussion focuses on the recently excavated site Kanaljorden, at Motala, Sweden, where select human bones—mostly skulls—from a dozen individuals have been deposited on a stone-packing on the bottom of a small lake. Two of the skulls were mounted on wooden stakes still embedded in the crania. Beside human bones, the finds also include artefacts of bone, antler, stone, and wood, as well as animal bones and botanical remains. The human and animal bones display a distinct spatial pattern, with different species deposited in different parts of the stone-packing. The context have been 14C-dated to c. 7800 cal. B.P.

Halligan, Jessi (Florida State University) and Michael Waters (CSFA, Texas A&M University)

[218] *Flooding, Drought, Fires and Extinctions: How Did Florida's Foragers Respond to the Pleistocene-Holocene Transition?*

While directly-dated sites are somewhat rare, northern Florida contains an extremely rich archaeological record of diagnostic artifacts from the Paleoindian and Early Archaic periods. Very commonly, Early Archaic diagnostics are discovered at the same sites as Paleoindian diagnostics. The Paleoindian components are presumed to be Pleistocene in age, while the Early Archaic is generally but not universally associated with early Holocene ages. Recent research we have been conducting in northwestern Florida has refined archaeological and paleoenvironmental records for the period 15,500–8,000 cal B.P. at several multicomponent archaeological sites through improved radiocarbon records and numerous proxy records. We therefore can discuss local system response to global climate change with increasing resolution. This also allows us to refine our discussion of human activity on this changing landscape.

[249] *Discussant*

Halling, Christine (Louisiana Department of Justice) and Ryan Seidemann (Louisiana Department of Justice)

[6] *Differential Diagnosis of an Unidentified Skeletal Anomaly: a Case Study of Mandibular Resorption from the Smith Creek Site, Mississippi*

The Smith Creek Site (22WK526), located in Wilkinson County, Mississippi, is principally a Coles Creek Period site (A.D. 700–1400). Human remains were recovered from this site in the 1960s by avocational archaeologists. Although the Smith Creek human remains are fragmentary and commingled, and the records related to their collection are nonexistent, these remains still present a significant data source for this region and time period. Of particular interest is an isolated adult mandible that exhibits an unidentified anomaly. This anomaly, predominantly characterized by resorption, is located on the buccal surface of the mandibular body near the second molar, and is unilateral. A review of the current clinical and archaeological literature resulted in no similar examples of this skeletal anomaly reported. A differential diagnosis performed suggests that the resulting lytic pitting may be due to soft tissue involvement such as possible circulatory disorders or musculoskeletal involvement. A discussion of the potential causes of the pathology, including a summary of the observed pathologies in the collection, serves as comparative material for the analysis of the resorption.

Halling, Christine [187] see Seidemann, Ryan

Halperin, Christina (Princeton University)

[108] *Intertwined Histories and Relational Personhood: Maya Co-essences (Spirit or Way Companions) Past and Present*

It is widely recognized that co-essences or spirit companions (wayob) were a part of ancient Maya understandings of personhood. Partly because ethnographic analogies are used to understand ancient practices, it is easy to assume that beliefs and experiences surrounding Maya co-essences were static over many hundreds of years. In examining archaeological, epigraphic, ethnohistoric, and ethnographic data, this paper investigates the history of co-essences and, in turn, the way in which co-essences made history. Such human-spiritual relations were intertwined with shifting social identities of gender, class, and culture. As such, this paper considers relationality from a pluralistic perspective.

Halstad McGuire, Erin (Department of Anthropology, University of Victoria)

[25] *Making Medieval Toys: Using Experimental Archaeology to Engage Students in Academic Enquiry*

The early medieval period is often thought of as a grim, violent era, characterized by conflict and social inequality. It is typically dominated by adult male narratives, albeit with a growing body of work centred on women's lives. Children have remained in the shadows, sometimes seen but rarely heard. There is limited archaeological evidence for children's activities and even less appears in textual sources from the Middle Ages. This paper explores the ways in which medieval children's toys and games can be used to engage learners in thinking critically about archaeology, children, and the past. It will examine the use of experimental archaeology projects with undergraduate students, involving the production of toys and games. In particular, this project aims to assess the character of research questions, hypotheses, and experiments developed by students tasked with researching medieval children through material culture and actualistic experiments.

Hambly, Joanna (University of St Andrews)

[35] *Wemyss Caves 4D: A Review of a Community 3D Digital Documentation Project at a Challenging Heritage Site in Scotland*

Former sea caves at East Wemyss in Scotland are unique because of the carvings within them. These include around 40 surviving Pictish (fifth–ninth century A.D.) symbols and animal representations; a possible Viking boat; early Christian crosses; and nineteenth-century monograms and graffiti related to local New Year rituals.

Located in a former coal mining area, today you are far more likely to read bad news stories about the impact of vandalism, structural instability, and coastal erosion upon this unique Scottish site than about the heritage itself.

Between 2013 and 2016, a collaborative project between the local community and archaeologists applied a suite of non-intrusive range-based and image-based 3D digital techniques to the caves and carvings. The purpose was threefold:

- preserve the landscape, caves, and carvings by 3D digital record;
- create digital tools for improved understanding, monitoring, and management;
- communicate the unique heritage of the Wemyss Caves to both local and global audiences in an innovative and engaging 3D medium.

We will review the contribution that this community 3D digital documentation project has made at a difficult, complex, and politically-charged heritage site, and consider the challenges of meeting the expectations of the diverse stakeholders involved.

Hambrecht, George (University of Maryland College Park), Ennis Barbary (Museum of Chincoteague Island), Elizabeth van Dolah (University of Maryland) and Kevin Gibbons (University of Maryland)

[191] *International Efforts to Engage with Climate Based Threats to Cultural Heritage*

As climate change threats to cultural heritage become more apparent, a range of responses is emerging across the globe. This session will discuss examples of different approaches to this problem in areas outside of the United States. While white papers and policy statements will be discussed, the main focus will be on 'on the ground' programs that are monitoring, and/or implementing mitigation and adaptation actions to protect cultural heritage around the world. Examples from Europe, South America, and the Arctic and Asia will be included. This paper aims to put actions taking place in the U.S. and in Europe in a larger global context. The content of this paper arises out of an ongoing survey of international efforts to combat climate change threats to cultural heritage taking place within the Climate Change Response Program of the U.S. National Parks Service.

Hambrecht, George [296] see Fitzhugh, Ben

Hamdan, Leila [83] see Damour, Melanie

Hamden, Leila [39] see Warren, Daniel

Hamilton, Marcus (Santa Fe Institute) and Briggs Buchanan (University of Tulsa)

[16] *The Archaeology of Clovis Landscape Use at the Mockingbird Gap Site, New Mexico and Surrounding Regions*

In this paper, we discuss recent work at the Mockingbird Gap Clovis site, New Mexico, and the surrounding region, designed to understand how Clovis hunter-gatherers utilized and adapted to the regional landscape and its available resources. Focusing on lithic raw material use, we show that the Clovis occupants of Mockingbird Gap had access to a wide diversity of high quality raw materials from a large area of the southwest. Moreover, Clovis raw material network analysis across the continent suggests that Mockingbird Gap was an important link between the southwest and southern High Plains. This work shows that Clovis people in this region of the southwest had an extensive and specific knowledge of the landscapes around them, and may well have had connections to other Clovis peoples in neighboring regions. Further, this pattern of landscape use and regional adaptation is more consistent with models that suggest Clovis hunter-gatherers used established regional home ranges rather than those that suggest Clovis populations swept across North America rapidly and non-redundantly.

Hamilton, Derek (Scottish Universities Environmental Research Centre), Kerry Sayle (Scottish Universities Environmental Research Centre), Colin Haselgrove (University of Leicester) and Gordon Cook (Scottish Universities Environmental Research Centre)

[103] *What Did You Have for Dinner Last Night? Revealing Diet, Mobility, and Movement of People within Middle Iron Age British Society through Multi-Isotopic Analysis*

The Middle Iron Age in southern central Britain (c. 300–150 cal B.C.) is a period that is often seen as becoming regionally inward-looking. A primary focus of the mixed agriculturalists is on building and maintaining massive hillforts. There is very little long-distance exchange or trade noted in the archaeological record, and the metalwork at the time takes on insular forms (e.g., invioluted brooches) that separate it from the Continental connections observable in both the Early and Late Iron Age.

This paper will present the results of recent multi-isotopic work ($\delta^{13}\text{C}$, $\delta^{15}\text{N}$, and $\delta^{34}\text{S}$) on human and animal bone collagen undertaken at the Scottish Universities Environmental Research Centre (SUERC) that have produced results that alter this narrative. We argue that the variability observed within the animal populations may likely be the result of the movement of animals across large distances, in this case a minimum of 20 km, but potentially much further. Also, this research has identified incomers to the human population that were interred within the Middle Iron Age burial ground, spawning questions pertaining to identity, community, mobility, and trade.

[103] *Chair*

Hamilton-Brehm, Scott (So. Illinois Univ. Carbondale), Lidia Hristova (University of Nevada Las Vegas), Susan Edwards (Desert Research Institute), Jeffrey Wedding (Desert Research Institute) and Duane Moser (Desert Research Institute)

[63] *Parallel Analysis of Ancient Human mtDNA Sequences and Radiocarbon Ages of Quids from the Mule Springs Rockshelter, Nevada, USA*

Ancient DNA research is revealing unprecedented information about past human migrations and residency. During the late Holocene, people exploited food and material resources near Mule Spring Rockshelter in the Spring Mountains of southern Nevada. In the 1960s, hundreds of chewed plant remains (quids) were recovered from the shelter deposits. To better constrain patterns of human residency, mitochondrial DNA (mtDNA) was extracted and partially sequenced from 20 representative quids that have sat unstudied in a museum collection for decades. We report on the detailed analysis of mtDNA sequences and time-resolved patterns of single nucleotide polymorphisms (SNPs) from paleopeople who occupied this site.

Hammerstedt, Scott (University of Oklahoma), Amanda Regnier (University of Oklahoma) and Sheila Savage (University of Oklahoma)

[240] *Litter Burials from Spiro's Great Mortuary Reconsidered*

Artifact color has both chronological and symbolic significance at Spiroan burial sites in the Arkansas River drainage of eastern Oklahoma. In this paper, we examine litter burials from the Great Mortuary and the Brown mound at Spiro. Ethnohistoric descriptions are used to suggest color symbolism in Spiroan ritual displays. These data are compared with color usage in earlier burials at Spiro and mounds elsewhere in the drainage. We wish to determine whether the Great Mortuary was the culmination of a long-standing burial program or if there was a distinctive change in symbolic ritual compared with earlier Arkansas Valley grave periods.

Hampson, Jamie (Stanford University)

[10] *Contested Images: Rock Art Heritage on and off the Rocks*

In many countries, cultural and socio-political identity is still shaped, manipulated, and presented through rock art. Both on and off the rocks, pictographs and petroglyphs are powerful tools. In this poster, I present results from 10 years of fieldwork in southern Africa, northern Australia, and west Texas. I focus on re-contextualised rock art images, in commercial settings, in academic publications, and as integral components of national symbols. I also consider innovative new visitor centres concerned with conservation, job creation, promoting community archaeology, and—above all—challenging visitors' preconceptions of rock art and of the Indigenous peoples who made it.

Hampton, Ashley (FAU)

[245] *Healers Also Gather Acorns: Examining the Division of Labor and Power Dynamics among California Hunter-Gatherers*

Previous theories concerning women's access to roles of power within Native American hunter-gatherer societies have focused on linking such access to socially proscribed gender identities, role flexibility, and/or kinship systems. My work seeks to validate such models within the context of women's access to the role of healer among California hunter-gatherer groups by looking to written records from the 1800s and ethnographies from the early 1900s. Through quantitative and qualitative analysis, I examine if cultures with multiple gender-linked innate qualities restrict women's access to the role of healer and/or if women having greater access to circumstantial labor roles equating to greater access to power.

My research tests notions about the strict binary division of labor via statistical reassessment of correlations between subsistence labor-roles and gender. By seeking to highlight how social roles were (or were not) seen as concordant with gender-identity, I posit that a more nuanced view of labor and gender is necessary. My research provides a better analytical framework from which archaeologists can interpret past distributions of power by showing the usefulness of ethnographic analogies that are more inclusive of engendered methodologies.

Han, Tao [180] see Zhang, Qun

Haney, Jennifer [176] see Welker, Martin

Hankins, Sharon, Yarely Meza (University of Texas at Austin) and Cristina Gonzales (University of Texas at Austin)**[93]** *Experimental Ceramic Technology Studies: Programme for Belize Archaeology Project*

This is a multifaceted approach utilizing environmental, ethnographical, and ceramic studies from various instructors with feedback from students, faculty, and experienced potters. Incorporating this project in our field school, generates more knowledge and curiosity in the observation of materials in the field pertaining to this technology. The environment and its contribution to our needs such as clay, water, temper, fuel, and firing methods are some of the most important aspects of research. These components are interactive. I regard pottery manufacture as a continuum. If any component is lacking or unavailable, adjustment or adaption must be initiated. The major component is the environment. This is an interactive economy. Manipulation of clay, temper, water, slips (pigments), and fire must be adjustable. This project has become a working lab in the field. Visual observation and participation of students, and our local community of Belize, may inspire more discussion and knowledge of pottery manufacture. We utilize only materials from our local surroundings. We are grateful to Dr. Fred Valdez, Programme for Belize, and my students (from 2000–present) for their participation. This poster includes participation of students: Cristina Gonzalez, and Yarely Meza. This poster will include examples of components, tools, and results of manufacture.

Hann, Don [165] see Walker, Jeff

Hanna, Jonathan and Michael Jessamy (Ministry of Tourism, Government of Grenada)**[183]** *Community Archaeology at the St. John's River Site, Grenada*

The St. John's River site is an early Late Ceramic Age settlement on Grenada's west coast, largely destroyed by the expansion of a public cemetery, stadium, and bridge. The St. George's Community Archaeology Project (SGCAP) was a summer program developed to engage young people and community members in the investigation and preservation of the remaining areas of the site. During the summers of 2011 and 2012, surface collection, shovel testing, and four excavation pits were implemented. The artifacts recovered fit mostly within the Troumassoid Period typology (A.D. 600–900), though local pastes, tempers, and paint combinations were observed for the ceramics. This paper summarizes the work of SGCAP and presents a template for a community-based approach that is now being applied to the heavily looted site of Pearls, Grenada.

Hanowell, Ben [38] see Brown, William

Hanratty, Colleen (Maya Research Program)**[292]** *Dating Maya Classic Ceramics in Northwestern Belize via OSL*

Twenty-four years of investigations conducted by the Maya Research Program at numerous Maya archaeological sites in northwestern Belize offers special opportunities for the investigation of the social and political dynamics at the end of the Classic Period in this region. In this paper, we discuss the Late Classic time period, including rapidly increasing populations, political reorganization, declining soil quality, and expansion of agricultural systems. We discuss the specific responses that are documented in the Terminal Classic Period and how the remnant populations of the Early Postclassic made use of the Classic Period agricultural infrastructure. Key to these insights are a precise understanding of the temporal dynamics of the Classic Period. The IIRMES OSL analysis of Terminal Classic Maya ceramics from this area has provided a great deal of insight into bounding this time period. In addition, the IIRMES study laid the groundwork for a larger OSL analysis of Classic Maya ceramics in conjunction with the University of Glasgow and Australia Catholic University. This research illustrates the utility of OSL dating techniques in archaeological contexts.

Hansen, Richard, Edgar Suyuc (FARES Foundation; Mirador Basin Project), Stanley Guenter (FARES Foundation; Mirador Basin Project), Beatriz Balcarcel (UNAM, Mexico City) and Carlos Morales (Universite Paris 1, Pantheon-Sorbonne)**[59]** *Economic Interaction and the Rise of Socio-Political Complexity in the Maya Lowlands: The Case from the Mirador Basin*

Investigations in 51 ancient cities of varying sizes in the Mirador Basin of northern Guatemala have revealed a variety of data relevant to the economic catalysts that were involved in the rise of social, political, and economic sophistication among the Preclassic Maya. The real "business" of the early Maya dealt with agricultural productivity and a powerful distribution mechanism to distribute and facilitate unification among a web of sites in the Mirador Basin. However, a variety of other economic indicators such as the importation of exotic shells, domestic fauna, obsidian, jade, basalt, granite, coral, ceramics, and other lithic tools demonstrate the varying degrees of social and economic power that provided the foundations of rank, status, and functional requirements during the rise of Maya civilization. While religious, political, and social ideology provided the foundations for a homogeneous society throughout the Maya Lowlands by the Middle and Late Preclassic periods, the economic manifestations of this ideology are well represented in the archaeological record, and provide additional understanding of the role of economic interactions in the rise of cultural complexity in the Maya Lowlands.

Hansen, Linda**[117]** *The Myth of the Willing Human Sacrificial Victim in Ancient Mesoamerica: Transformation of the Symbolic Complex of Ritual Sacrifice in Ancient Oaxaca and Teotihuacan*

Past scholarship concerning human sacrifice in ancient Mesoamerica has suffered from oversimplification and misuse of traditional theoretical models of sacrifice. In addition, many scholars are still suffering a hangover from a twentieth century Western scholarly binge that romanticized notions of an iconic, peaceful Maya civilization (a type for all Mesoamerica) with exceptional interactions with nature. As a result, pan-Mesoamerican cosmological principles are still endorsed as the ubiquitous causal force behind all ritual sacrificial symbolic systems and practices. This theoretical miscarriage involves several shortcomings: 1) It disregards the multifaceted and shifting nature of ritual activity and varied expressions at different levels of social strata, 2) it solemnizes the participants in the sacrificial act, the sacrifice, and the sacrificial victim, as equal participants in a communal operation of reciprocity with the gods, and 3) it ignores the issues of power relations. In this paper, I will exhibit a more complex arena of sacrificial rites and reveal dialectical ideological constructions of sacrifice on different echelons of society in both ancient Oaxaca and Teotihuacan. In both case studies, increased urbanization and social complexity introduced new symbolic complexes which included human sacrifice increasingly aligned with warfare, domination of foreigners, and unwilling sacrificial victims.

[117] *Chair*

Hansen, Brooke [227] see Rossen, Jack

Hanson, Sydney, Jade d'Alpoim Guedes (Washington State University), Steve Weber (Washington State University) and Thanik Lertcharnrit (Silpakorn University)

[19] *An Archaeobotanical Analysis of Four Prehistoric Central Thai Sites: the Preliminary Results*

Thailand is a relatively new frontier for archaeobotanists, having suffered in the past from a shortage of archaeobotanical research. While archaeologists in southeast Asia have begun to chart when and how rice and millet agriculture developed and spread, a clear picture of prehistoric agriculture in central Thailand has yet to emerge. This paper describes some preliminary results from a series of sites that have been occupied from ca. 2500 B.C.E. to 500 C.E. These are Non Pa Wai, Non Mak La, and Nil Kham Haeng, as well as data from a new site, Phromthin Tai. Climate has been implicated as a factor behind differential patterns in plant use across the time period and area examined. We examine these patterns in the light of new archaeobotanical data as well as an improved understanding of ecological and climatic boundaries.

Hantman, Jeffrey [284] see Gallivan, Martin

Hara, Kristyn

[252] *Urbanizing Forests: Paleoethnobotanical Research at the Royal Capital of Angkor, Cambodia*

Upon his ascension to the throne, King Yaśovarman I (r. 889–910 A.D.) founded a new capital at Angkor in northwestern Cambodia that was to become the major center of the Khmer Empire and a dynamic religio-political landscape marked by extensive urbanization and environmental change. Religious institutions played a particularly important role in localized human-environment engagements while contributing to broader processes of polity-building. Drawing on historical ecology, this paper underscores the importance of forests in particular as sites of material and symbolic resources in understanding the production and transformation of the Angkorian landscape. Paleoethnobotanical data collected from archaeological excavations at the Yaśodharāśramas—monastic institutions founded by King Yaśovarman I as part of his building campaign—provide insights into vegetation change, resource use, and social practices as a step towards understanding forest histories and management within the context of urban development at Angkor.

Hard, Robert (Univ of Texas at San Antonio), John R. Roney (Colinas Cultural Resource Consulting), A.C. MacWilliams (University of Calgary), Mary Whisenhunt (University of Texas at San Antonio) and Mark Willis (Blanton and Associates)

[168] *Early Agricultural Period Cerros de Trincheras on the Upper Gila River, Arizona*

Early Agricultural Period (EAP) occupations in the Upper Gila River in southeastern Arizona indicate that EAP cerros de trincheras are more widespread than previously thought. Recent fieldwork evaluates evidence from these sites to address issues related to chronology, agriculture, and warfare. Sites include both cerros de trincheras (hilltop sites) as well as valley sites. The site of Round Mountain contains 1.9 km of berm walls and terraces, 16 rock rings, and was built on a 640 foot hill during the Cienega phase (ca. 800 B.C.–A.D. 100). The DotMon site is situated on a 400 foot ridge above the Gila River and includes 250 m of walls and six rock rings. The Duncan Doughnut site is in a valley setting containing a midden, evidence of maize use, and at least two pithouses and lies below Round Mountain. Recently acquired drone, surface, and test excavation data will be evaluated in light of questions related to chronology, maize use, and warfare.

Harding, Gregg (University of West Florida), Jason Wenzel (University of Florida) and Alita Huff Mikiten (University of Central Florida)

[7] *Beyond the Theme Parks: Community Archaeology in Greater Orlando*

From 2006 to 2012, an extensive community-based archaeology program operated throughout the Greater Orlando area that was comprised of a team of researchers associated with regional colleges. In conjunction with local governmental agencies, nonprofit organizations, and private property owners, the efforts of the team led to the documentation and study of new and existing archaeological sites and the development of local museum exhibits. The poster will visually convey the scope and success of these efforts, as well as illustrate heightened public awareness and community outreach efforts. The effects of this work are still being felt, resulting in continued study of archaeological and historic resources throughout Greater Orlando.

Hardy, Thomas [206] see Hoover, Corey

Hardy, Meredith (National Park Service) and David Morgan (National Park Service)

[229] *The NHPA and the Southeast Archeological Center at 50: Reflections on Learning, Inclusion, and Stewardship*

Sharing a birth year with the National Historic Preservation Act, the National Park Service's Southeast Archeological Center has served as steward to the cultural resources and archeological heritage for the national park units across the southeastern United States. For 50 years, SEAC has overseen and conducted the majority of NHPA-related activities in these parks, provided training and education to both NPS staff and the public. This paper examines the roles SEAC has played in resource stewardship, protection, and education and how these roles have changed over time, reflecting a continuing maturation of understanding of significance, inclusion, and diversity of our nation's heritage.

Hardy, Thomas (University of Pennsylvania)

[233] *Colonial Practices in the Imperial Heartland: The Inca Conquest and Transformation of the Lucre Basin, Cuzco, Peru*

This paper will present data from the author's dissertation research at the site of Minaspatha, located in the Lucre Basin at the eastern end of the Cuzco Valley, Peru. Minaspatha has a long history of occupation, dating to the Early Horizon to the end of the Late Horizon, but was conquered as the final component of the Inca heartland immediately prior to the early imperial excursions by the Inca.

The results of recent excavations at Minaspatha and the different phases of occupation and material culture will be discussed, as well as the implications for the cultural history of the Cuzco area and the Andean area more generally. I will focus primarily on various aspects of the Late Intermediate Period (A.D. 1000–1400) and Late Horizon (A.D. 1400–1532) occupations, particularly the transformation of Minaspatha and the Lucre Basin as well as changes in local material culture, and the appearance of Inca state-controlled material culture under Inca rule. I will close by exploring the implications of these changes for social and cultural transformations in the local populations through the lens of colonialism, and for Inca imperial practices more broadly—especially close to the heartland, which is rarely interpreted in this manner.

Hare, Timothy [26] see Masson, Marilyn

Hare, Timothy (Morehead State University)

[121] *Mapping Mayapán's Archaeological Remains and Environmental Characteristics Using UAVs and Photogrammetric Software*

The integration of unmanned aerial vehicles (UAVs) and photogrammetric data processing into existing field techniques simplifies and accelerates mapping and environmental reconstruction. Ongoing investigations in and around Mayapán face the common challenge of mapping archaeological and environmental features and attributes in the context of difficult terrain and dense surface cover. The 2015 field season depended on UAV photography and photogrammetric processing for site and excavation photos as well as production of 3D modeling of archaeological remains and excavation units. In this presentation, I outline the technology used, the data processing workflow, and the resulting products including oblique photos, orthorectified aerial photos, digital elevation models, 3D models, and data layers for use in geographical information systems. I conclude with a discussion of extending and modifying the new technologies, including integrating LiDAR, to better serve archaeological research.

[158] *Discussant*

Harkleroad, Eric

[70] *Colonizing Yourself: The British Colonization of Britain*

Often discussing Colonialism means discussing the colonized and the impact of the colonizers on them highlighting indigenous responses to the situation as well as looking at methods of resistance and signs of the agency of the colonized. All too often we overlook the impact of this process on the colonizer. I argue that during the rise of the British Empire, the role of colonizer became such a part of national identity that it colored interpretations of British prehistory. This is most evident when looking at the conquest of Britain by Rome. The coming of Rome is often seen as unproblematic, an all too familiar encounter of an indigenous population with a colonizing power, the British identifying as the colonizer rather than as the indigenous population. I highlight how our understanding of this period is still largely based on Britain's experience of those it encountered during its role as a colonizer. I examine the extent to which Roman involvement in Britain can be looked at as an example of colonialism. Evidence from the end of the Iron Age and the beginning of the Romano-British period will be analyzed in light of this discussion, showing more evidence of continuity than change.

Harland, Jen [210] see Mainland, Ingrid

Harman, Robert [214] see Macdonald, Danielle

Harmon, Brian [268] see Dalpra, Cody

Harper, Charlie (Florida State University) and Daniel M. Seinfeld (Florida Bureau of Archaeological Research)

[7] *Woodland Period Settlement Patterns at Letchworth Mounds (8JE337), Jefferson County, Florida*

The Letchworth Mounds site (8JE337), located near Tallahassee in Jefferson County, Florida, is a predominately Woodland period site that encompasses the largest earth mound in Florida. In addition to this monumental earthwork, a number of smaller mounds survive and it is thought that as many as 20 mounds may have been lost to modern land use. During the summer of 2014, the Florida Bureau of Archaeological Research and the Florida State University conducted a field school at the Letchworth Mounds site. This poster discusses the use of GIS to correlate the results of the 2014 fieldwork with the patchwork of controlled excavation, shovel testing, and surface collection that has occurred on the site since 1995. Through the study of artifact distributions, the assembled GIS data is used to explore both the overall chronology of the site and the nature of discrete activity areas in relation to the surviving earthen architecture. The results of this analysis provide a diachronic picture of activity and settlement patterns at the Letchworth Mounds site, which is compared to patterns visible at other Woodland period sites in the southeastern United States.

Harper, Thomas (SUNY at Buffalo)

[95] *Population Dynamics and the 5.9 ka Event: A Methodology for Relating Climate Change and Demography in Eneolithic Romania, Moldova, and Ukraine*

For over a decade, it has been suggested that several events of the fourth millennium B.C. in Romania, Moldova, and Ukraine—the rise and fall of the giant-settlements of the Tripolye culture in central Ukraine, the abandonment of Gumelnița tell settlements in the Danube Valley, and the dissolution of the “Old European” complex and advent of the Bronze Age—were influenced by climatic factors, notably the 5.9 ka event and the beginning of the Subboreal Period. However, the simple synchronicity of these events with changes in super-regional climate proxies, taken alone, constitutes a poor argument for climatic causality. In order to make such an assertion, it is necessary to reconstruct the entire chain of events through interrelated climatic, environmental, and cultural systems. In the context of my study region, this takes the form of quantitative reconstruction of ca. 3,300 years of demographic development, modeling spatially variegated environmental time series using pollen core data, and performing GIS-based site suitability analyses at multiple time references. In this way, the super-regional scale may be linked to the regional and local scales, and the revealed detail may provide more coherent and specific arguments for the effects of climatic variability on cultural systems.

Harrenstein, Tristan (Florida Public Archaeology Network)

[260] *What Have We Here?: Demonstrating the Opportunities for Heritage Preservation to Local Governments*

Part of the Florida Public Archaeology Network's mission is to work with local governments to both protect archaeological sites and to ensure that these communities receive the benefits related to their preservation. However, many of the smaller communities in Florida are unaware of the opportunities available for state and federal assistance in preserving their heritage. This paper details a new project designed to educate local governments and historical societies about the benefits and legal pitfalls associated with archaeological and historic resources.

Harrington, Katherine (Brown University) and Eve Dewan (Brown University)

[90] *Curricular Collaboration: Exploring Strategies for Sustainability in Educational Outreach in Providence, RI*

University-based educational outreach programs face various challenges in sustainability from year to year. As student leaders graduate and professors or museum professionals change positions, programs can lose momentum. Similarly, programs designed without clear input from the communities they serve are less likely to succeed. Here, we present some of the strategies for sustainability explored by the "Think Like an Archaeologist" program, a collaboration between the Joukowsky Institute and the Haffenreffer Museum of Anthropology at Brown University and the RISD Museum, which has provided archaeological programming for local 6th grade social studies classrooms in Providence since 2010. Recently, we explored modifications to the program which would align it even more with the Common Core State Standards, which Rhode Island adopted in 2013. By slightly tweaking our presentations and activities, we could ensure that we were providing more useful programming for area teachers. We also discuss the integration of the program into the graduate and undergraduate curriculum at Brown in a course called "Community Archaeology in Providence and Beyond." This course not only trained an interdisciplinary group of additional instructors for the outreach program, but also prompted students to think critically about issues in community archaeology more widely.

Harrington, Victoria

[158] *Discussant*

Harris, Alison (Dept. of Archaeology, Memorial University of Newfoundland), Ana T. Duggan (McMaster University), Stephanie Marciniak (McMaster University), Hendrik Poinar (McMaster University) and Vaughan Grimes (Memorial University of Newfoundland and Max Plank)

[85] *Stable Isotope Evidence for Precontact Amerindian Diet in Newfoundland, Canada*

For a millennium, the island of Newfoundland was home to two cultures: the Palaeoeskimo, and the Amerindians who later became known historically as the Beothuk. Evidence from site distribution patterns suggests that each culture negotiated the shared space by utilizing different resources. However, after 1,500 years B.P., the cultural dynamics of the island began to shift as a period of climate warming altered the resources that were available on the outer coast. While the Palaeoeskimo may have been forced to retreat to mainland Canada, the generalized marine-terrestrial economy of the Amerindians is credited with their successful sustained occupation of insular Newfoundland. Biomolecular research undertaken as part of an interdisciplinary research project investigating Amerindian origins, diet, and mobility patterns in Newfoundland has allowed us to test these hypotheses, yielding new evidence for subsistence patterns. This paper considers agency and subsistence adaptability in light of stable isotope data from Amerindian (n = 21) and faunal skeletal remains spanning over 1,000 years of Newfoundland history. We model the dietary strategies enacted by the Amerindians that enabled them to successfully cope with the demands of the island environment.

Harris, Khadene (Northwestern University)

[126] *Postemancipation Bois Cotelette: An Update on Current Fieldwork*

This paper is a summary of the ongoing analysis of artifacts and spatial data recovered from postemancipation house sites on the Bois Cotelette Estate in Dominica. This project began as an examination of the social and economic impact of emancipation on the lives of the formerly enslaved. The projects goal is to explore how a shift in labor conditions altered the physical layout of postemancipation settlements and determined the kinds of access individual households had to local and regional markets. Preliminary findings of three summers of fieldwork reveal very little diversity in artifact assemblages. Smaller assemblages can be explained by shorter occupation periods, natural erosion processes, or that freedom did not necessarily provide laborers with greater opportunities to accumulate wealth. The lack of material culture, however, does beg a reconsideration of the methodological and theoretical associations that drive an interpretation of postemancipation social life. With this paper, I emphasize how artifacts on their own cannot answer fundamental questions we have of this time period. I point to the results of a mapping exercise used alongside the collection of oral histories from present-day residents and laborers to illustrate alternative interpretations of the impact of emancipation on the Bois Cotelette Estate.

Harris, JWK [177] see Hlubik, Sarah

Harris, Matthew (AECOM Technologies)

[247] *In Defense of Data: Realigning Archaeological Modeling Theory with Modern Statistical Learning Approaches*

The acceptance of statistical modeling as common practice in archaeological studies is highly varied across applications and methodological focus. As a field, we lack a unified body of model building theory, best practices, and examples that demonstrate the successes and failures of various techniques applied specifically to archaeological data. The literature on archaeological predictive modeling (APM) provides a notable example in the form of the "Inductive" vs. "Deductive" debate. This false dichotomy unduly influences the general perception and approachability of these methods. Though there is a recent uptick in model-based analysis in archaeology, progress has been hampered by the APM tumult and anemic publication rate for quantitative methods research following the post-processual critique. Quantitative approaches in archaeology have lagged behind the trends in neighboring fields such as social sciences, ecology, and economics. Recent advances in statistical methods, analytical software, and the open science initiative present an opportunity for the construction of a framework for model based archaeology from which the evaluation of techniques and findings can be more accessible to the entire field. This presentation will discuss the motivations for such an approach, explore the theory of APM through examples, and offer potential routes for constructing such a framework.

Harris, Michael (Florida Atlantic University)

[253] *A Generous Spirit*

This paper offers a reflection on Jerry Kennedy's manifold contributions to the Department of Anthropology at Florida Atlantic University and their continuing influence a decade past his retirement. These contributions include his work on the archaeology of south Florida and elsewhere, the training of students at both undergraduate and graduate levels, the creation of programs, and the lending of his administrative acumen to department causes. Jerry's work as an archaeologist has been conditioned by his generous spirit, putting student and program achievement above that of his individual career. As a result, his legacy endures not just in archaeology, but in the students and colleagues with whom he has partnered.

Harrison, James (Spokane Tribe)

[29] *Preserving Cultural Landscapes beyond the Reservation Boundary*

The Spokane Tribe of Indians Preservation Program conducts a range of projects within the Tribe's ceded areas in northeast Washington State. The goal of this work is to increase tribal sovereignty and to help preserve intact portions of the Tribe's traditional landscape and resource patches in order to secure

long-term access for tribal members to a mosaic of traditional cultural sites beyond the reservation boundary. The program competes with private CRM firms for archaeology consultation projects, particularly those located in high probability landforms. We work to document and protect traditional places such as hunting/fishing/gathering localities. Cemeteries and other cultural sites located are periodically monitored to ensure they remain undisturbed. In summary, this paper describes how indigenous archaeology can serve as a much needed new paradigm in the field of cultural resources management.

Harrison, Jessica [238] see Rosado Ramirez, Roberto

Harrison, Ramona (University of Bergen, Norway), Thomas H. McGovern (City University of New York) and George Hambrecht (University of Maryland)

[296] *Comparative Ecodynamics of North Atlantic Islands: A Progress Report*

Support from U.S., Canadian, Scandinavian, and U.K. funding bodies 2007–16 has made possible a sustained multi-investigator multi-regional interdisciplinary series of investigations of the offshore islands of the North Atlantic (Faroes, Iceland, Greenland) coordinated by the NABO research cooperative. These islands were connected by Viking Age migrations from mainland Scandinavia and the British Isles, and the diverse fates of their human populations during the Middle Ages and Early Modern periods have become iconic examples of human impact on island ecosystems, unintended consequences of introductions, and disastrous impact of climate change. The case of Norse Greenland has become a controversial but influential example of a society that “chose to fail.” This presentation provides an overview of the new work in field and laboratory that is both expanding our understanding of the Norse North Atlantic and offering major challenges to established scenarios of resilience, human impact, and social collapse. “Island laboratories” in the North Atlantic continue to provide new perspectives on long term human ecodynamics.

Harrison-Buck, Eleanor (University of New Hampshire)

[221] *Male-Female Sexuality in the “Fruit Bearing” Maya New Year Celebrations: Understanding the Past and Present Heritage through Participatory and Archaeological Studies*

Among contemporary Tz’utujil Maya, the Mam are the “Year Bearers” of an ancient 260-day ritual calendar still used today in highland Guatemala, celebrated annually when the seasons change from dry to wet. This spring celebration corresponds with Semana Santa (Holy Week) and is when the maize is planted and cacao and other fruits are harvested. Preceding Easter, young male initiates travel on foot down from the highlands to the cacao groves that have existed in the coastal lowlands since ancient times. For the Maya, maize and cacao are personified male and female, respectively. These gendered goods are paired as regenerative beings and reflect the life cycles of plants and humans that are planted (born) and harvested (sacrificed) in hopes of being reborn again. Male-female exchange partners are historically linked to sacrificial rites, even today, despite heavy Christianization. Following Strathern (1988), we suggest male-female pairings are simultaneous expressions of movement and regenerative powers, where same-sex and cross-sex relations constitute a mutual interdependency. For the Maya, this distinct way of knowing the world emphasizes one’s reciprocal relationship with it. Our understanding of this gendered relational ontology comes from our own archaeological work and participation in contemporary Tz’utujil rituals and pilgrimage events.

[158] *Discussant*

Harrod, Ryan (University of Alaska Anchorage) and Aaron Woods (University of Nevada, Las Vegas)

[24] *A Line in the Sand: Bioarchaeological Interpretations of Life along the Borders of the Great Basin and Southwest*

Prior to A.D. 1300, several archaeologically defined cultures were identified at the intersection of the American Great Basin and southwest. Human skeletal remains were analyzed from sites that represent the borders and the heartlands of the Fremont, the Virgin Branch Puebloan, and the northern San Juan Puebloan cultural areas. The goal was to examine how life in the crossroads of these regions affected the experiences of individuals and groups. The following indicators were used to reconstruct morbidity and mortality profiles: age-at-death and biological sex, markers of stress and pathological conditions, and scars of traumatic injury. In addition to these reconstructions, health and demography was contextualized using analyses of material culture from key sites in their respective regions. By considering both human remains and material culture, distinct and blended cultural traits were delineated in an attempt to better understand how borders structure inter-social relations. The value of an interdisciplinary approach is that it provides a more integrated understanding of each culture that considers not only how bodies record an individual’s experience in life, but the way that groups interacted with one another.

Harrod, Ryan [104] see Woods, Aaron

Harrower, Michael (Johns Hopkins University)

[138] *Comparative Water Histories: An Outline of Contrastive Juxtaposition as Method in Anthropological Archaeology*

Anthropology has long been marked by tension between emphasis on commonalities among histories and cultures on one hand, alongside emphasis on histories and cultures as unique, contingent, and exceptional on the other. Vernon Scarborough is one of few who have pioneered new understanding of water among ancient societies through both focused study of particular regions, as well as broad, synthetic comparison of water among ancient societies worldwide. In an era marked by a daily increasing plethora of information, global syntheses conducted by individuals become less and less feasible, and comparison as an addendum to research such as in edited volumes is a helpful but insufficient mode of analysis. I describe and argue for contrastive juxtaposition of two or a few cases, which can thus be examined in greater detail. Although comparison of two or three cases in analysis is not new, as exemplified in the work of Margaret Mead, Clifford Geertz, Marshall Sahlins, Robert Mc. Adams, and Timothy Earle, this mode of comparison remains underutilized. We need not seek to prove cases are the same or closely similar; but rather, contrasting cases that are very different also yields critical insights with regard to inconspicuous similarities, differences, and foundational dynamics.

Harry, Karen (University of Nevada-Las Vegas)

[292] *Early Puebloan, Late Puebloan, or Paiute? Using Luminescence Dating to Address Issues with the Virgin Branch Ceramic Chronology*

The Virgin Branch ceramic typology is poorly defined. Definitions and chronologies of most types were established more than half a century ago, when little work had been conducted in the region. Further, because of an absence of tree-ring dates, the placement of most types has relied on cross-dating with Kayenta pottery styles. These situations can create problems when using ceramics to date archaeological contexts, as illustrated by recent excavations at the Pete’s Pocket site. This site, located on the Arizona Strip, contains Puebloan architecture and gray ware pottery. Unexpectedly, however, it also contained numerous ceramics with brown pastes, some tempered with olivine and some with sand. Traditionally, brown olivine-tempered sherds are considered associated with Basketmaker or early Puebloan occupations, and brown sand-tempered sherds with early historic Paiute

occupations. Because the site is multicomponent and many of the rooms are filled with trash from earlier occupations, the temporal placement of these ceramics cannot be resolved using traditional dating methods. To determine the temporal and cultural association of these ceramics, therefore, we relied on luminescence dating of selected sherds. The implications of the results for understanding both Virgin Branch ceramic typologies and the occupation of the Pete's Pocket site are discussed.

[68] *Chair*

Harry, Karen [68] see Horton, Shannon

Hart, Siobhan (Binghamton University)

[221] *Gender, Masculinity, and Professional-Avocational Heritage Collaborations*

Relationships among professional and avocational archaeologists have changed in the last few decades with the increase in collaborative heritage projects worldwide. Professionals and avocationals often work side-by-side on archaeological sites, collaborate on research, and engage in mutual knowledge sharing. However, little attention has been paid to the gendered dimensions of these relationships. Feminist critiques of research and practices within professional archaeology, along with demographic shifts in the field, have transformed practice in many ways, but little attention has been given to the way gender structures our social relationships with contemporary partners in archaeological projects, including descendant communities, local residents, and avocationals. In this paper, I consider the gendered dimensions of avocational-professional relationships, drawing from experiences with a multistakeholder collaborative project in New England. Masculinist notions of archaeology and authority pervade avocational-professional relationships and can create tensions in all phases of community-based projects. This paper examines avocational-professional relationships as a step towards: (1) discerning how gender structures and intervenes in the social relationships of archaeologists and avocationals; and (2) exploring the implications of engendering professionals and avocationals for collaborative efforts.

Hart, Kelsie [286] see Cox, Maria

Hartford, Alexis (Harvard University)

[236] *Classifying Classic Period Ceramics from Azcapotzalco: A Comparison of INAA and Petrography*

This pilot project used petrographic analysis to examine 15 Classic Period sherds from the site of Azcapotzalco, Distrito Federal, Mexico. These sherds had already undergone instrumental neutron activation analysis (INAA), which separated the sherds into two chemical groups—Azcapotzalco-B and Tenochtitlan—and left one-third of the sherds unassigned. This project aimed to compare the INAA results with results obtained through the visual analysis of the microstructure of the sherds and determine how the two methods relate to each other. Additionally, the project attempted to determine whether these large chemical groups could be segmented into subgroups using visual analysis and to attempt to connect the fabric of the unassigned sherds with the fabric of sherds that had been assigned to a chemical group. Three fabric groups, two with variants, were created through a visual analysis of the microstructure of the sherds, only one of which corresponded fully with its chemical group assignments. This project has broader implications for pottery production at Classic Period Azcapotzalco and trade throughout the Basin of Mexico in the Classic Period.

Harvey, Virginia (University of Manchester), Mike Buckley (University of Manchester), Phillip Manning (University of Manchester/College of Charleston), Victoria Egerton (University of Manchester/College of Charleston) and Andrew Chamberlain (University of Manchester)

[183] *Mammal Species Diversity on Cayman Brac (Cayman Islands) via Collagen Fingerprinting*

The endemic terrestrial mammals of the Cayman Islands in the western Caribbean Sea all appear to have become extinct since the start of human colonisation 500 years ago. Extinct fauna include two species of the soricomorph Nesophontes and three species of Capromyid rodent. Introduced rodents and domesticated species now exclusively represent the terrestrial mammal fauna of the Cayman Islands. The Cayman Islands are carbonate-dominated successions typified by karst limestone that includes numerous caves and rock fissures. The sedimentary deposits within the caves preserve sub-fossil remains documenting island biodiversity through time in a tropical environment that would not usually conserve organic remains. We have used collagen fingerprinting, Zooarchaeology by Mass Spectrometry (ZooMS), to rapidly mass-identify fragmentary skeletal samples from the caves of Cayman Brac and screen for those amenable to radiocarbon dating, potentially utilised to reveal extinction chronologies. ZooMS and 14C dating in combination enable us to establish a biodiversity 'catalogue' to showcase species presence and abundance throughout the zooarchaeological record—spanning human colonisation. Such knowledge can improve our understanding of anthropogenic impacts in this locality and can easily be transposed to other comparable biomes.

Harvey, Amanda R. [230] see Schmitz, Kirk

Haselgrove, Colin [103] see Hamilton, Derek

Haslam, Michael (University of Oxford)

[167] *Wild Capuchin Monkey Archaeology*

The known record of tool use in the human lineage now extends back 3.3 million years. For other animals, however, we have very few clues as to how and when their tool use behaviors evolved. Study of tool use among extant primates, in particular, offers an opportunity to develop comparative models and analogies for human technologies. Here, I present the results of recent archaeological investigations into stone pounding behavior by wild bearded capuchin monkeys (*Sapajus libidinosus*) in Brazil. These monkeys leave a distinctive pattern of tools on the landscape, including accumulation of selected, transported, use-worn stones. Our excavation and dating of capuchin sites demonstrates that their tool use extends at least to the Brazilian precolumbian era, making these the oldest known non-hominin tools outside Africa.

Hasstorf, Christine (University of California-Berkeley)

[122] *Discussant*

Hauser, Mark [100] see Oas, Sarah

Haussner, Elizabeth [64] see Carr, Christopher

Haviser, Jay (St. Maarten Archaeological Center), Menno Hoogland (Leiden University), Joost Morsink (Leiden University), Ruud Stelten (Terramar Museum) and Corinne Hofman (Leiden University)

[220] *Early Human Occupation on Bonaire and Curacao, Dutch Caribbean*

In January 2016, Leiden University initiated a project on Bonaire, Dutch Caribbean. Through a multidisciplinary perspective, and in comparison with earlier Leiden research on Curacao, the goal of this project is to examine how people utilized the landscape during the earliest occupation of the islands. Archaeological investigations focus on two locations: Wanapa II site and caves. Located behind Lac Bay, the Wanapa II site will yield data on settlement dynamics and house structures on Bonaire. The caves will provide proxies on how people envisioned their ritual landscape and utilized the caves within their daily routines. Wanapa II's unique setting, at the edge of a tidal flat, protected by the bay and mangroves, also warrant a paleo-ecological and coastal dynamics study to reconstruct the environmental setting in which people settled these locations. Through a detailed reconstruction of settlement and environmental proxies, it is possible to determine Bonaire and Curacao's roles in larger pan-Caribbean networks of exchange and interaction.

Haviser, Jay [222] see Morsink, Joost

Hawkins, Shaunna (White Mountain Apache Tribe)

[203] *Discussant*

Haws, Jonathan [146] see Holst, Melissa

Haws, Jonathan (University of Louisville)

[170] *Human Occupation of Lapa do Picareiro (Portugal) during the Last Glacial Maximum*

During the Last Glacial Maximum, abrupt climate changes created highly variable paleoenvironments inhabited by human populations across the Iberian Peninsula. Pollen and sedimentary analyses from deep-sea cores off Portugal provide records of regional-scale paleoenvironmental responses to the climate shifts that punctuated the LGM. Archaeological assemblages from caves and rockshelters offer a more local-scale understanding of human-environment interactions during this period. One site in particular, Lapa do Picareiro, has yielded a continuous, stratified sedimentary sequence that provides a diachronic record for MIS 2 human occupation and environmental change. Here, I present archaeological data from the Late Gravettian and Solutrean (Levels U-O). The taphonomic study of the faunal remains informs on local paleoenvironments and human diet choice during the LGM. Sedimentological analyses including magnetic susceptibility link the cave deposits with global scale records of LGM climate from the Greenland ice cores. The results are used here to understand human responses to long-term environmental change in central Portugal. The spatial distribution of artifacts, animal bones, and charcoal concentrations suggest sporadic, short-term visits to the cave prior to and during the LGM.

Hawthorne, Paige (Washington State University) and Lori Phillips (Washington State University)

[148] *Reaching Out: Public Archaeology at Washington State University*

Cougar Quest is an academic summer camp for students on the Washington State University campus and is designed to meet the educational and social needs of college-bound students entering grades 7-13. By attending three workshops of their choosing, students are immersed in a variety of fields and subjects that are taught by WSU professors and graduate students. This past summer, a workshop focused on archaeology was conducted by graduate students to show students the processes of archaeological methods and ideas. By including hands-on programs and activities, students were able to experience the technological processes of artifact creation as well as their own archaeological "excavation." This poster highlights the programs initiated at this past summer's Cougar Quest camp, the benefits of community outreach and public education, and future approaches to communicating appreciation for archaeology and heritage resources.

Hayashida, Frances [259] see Salazar, Diego

Hayashida, Frances (University of New Mexico)

[259] *Chair*

Hayes, Katherine (University of Minnesota, Twin Cities)

[18] *The Spiritual Economy of Shell in Native North America: Still Circulating*

Shell material, particularly marine shell, has long been recognized in the archaeology of precolonial America as a "prestige" good of complex meaning. Particularly in the Mississippian world, shell traveled great distances and appeared in richly meaningful contexts of use. Even in areas abundant in shellfish, however, it played a complex role: food, adornment, pottery temper, landscape alteration. After colonization shell use did not disappear, and oral traditions indicate some of the ways in which its spiritual significance demanded continued circulation. Yet the spiritual economy and value of shell in the more recent past has not been widely explored as a continued (even if altered) circulation. In this paper, I explore some of the material properties of shell, its contexts of use in deep and recent history, and its movement among and between people. I propose a sense of "spiritual economy" which implies the mutual and ongoing influence of materiality, spirituality, and sociality. The movement of shell parallels a circulation of interpretation and memory between past and present, when we consider the conditions of possibility for interpreting the past and present.

[70] *Discussant*

Haynes, Gary [177] see Wriston, Teresa

Hays-Gilpin, Kelley (Northern Arizona Univ) and Peter J. Pilles, Jr (Coconino National Forest)**[258]** *Amateur and Professional Archaeologists: Who's Who?*

Archaeology in the state of Arizona has been a partnership between professionals and "amateurs," or avocationalists, for more than a century. From an early focus on collecting "antiquities" for display, both professionals and avocationalists have followed a parallel course in the development of method and theory and the specialization of skills and interests that today has blurred the distinction between "professionals" and "amateurs." This paper will discuss the growth of avocational involvement and the concerns, as well as encouragements, expressed by professionals, institutions, and bureaucrats during this time. Examples will be presented to demonstrate some of the important contributions "amateurs" have made and continue to make in advancing our understanding and appreciation of Arizona's prehistory.

Hayward, Michele (Panamerican Consultants), Frank Schieppati (Panamerican Consultants) and Michael Cinquino (Panamerican Consultants)**[131]** *Zoomorphs in Caribbean Rock Art*

While Caribbean rock art is characterized by its high percentage of human-like facial and body images, realistically-depicted and stylized zoomorphic motifs are also present. Fish, turtles, birds, and marine mammals are among the animals found amidst anthropomorphic, geometric, and abstract designs. We identify a number of zoomorphic forms and describe their distributional patterns from our current set of rock art sites, particularly Puerto Rico. We also discuss the roles or functions these particular animal representations may have had in prehispanic native societies.

Headrick, Annabeth (University of Denver)**[117]** *Discussant***Heath, Barbara****[293]** *Characterizing Colonowares from Three Sites in the Central Virginia Piedmont*

First described in the literature in 1962, colonowares were initially interpreted by Ivor Noël Hume as low-cost provisions to enslaved people that substituted for more costly colonial ceramics. Later, archaeologists argued that they were the products of enslaved potters or represent a creolized folk pottery that mixed Native American, African, and European potting traditions. Whoever made them, a growing body of evidence indicates that they were used by enslaved and free people across racial boundaries. While significant research has been undertaken on assemblages recovered from the tidewater and northern piedmont regions of the state, comparatively little is known about the manufacture, distribution, and use of colonoware in the central Virginia piedmont during the eighteenth and early nineteenth centuries. Drawing on small assemblages from two sites in Bedford County and one in Powhatan County, this paper describes variability in paste, surface treatments, and rim, handle, and base forms within each assemblage, explores the distribution of colonowares across each site, and places them within the context of the historic communities within which they operated.

Hechler, Ryan [196] see Pratt, William

Hechler, Ryan (Tulane University), William Pratt (Texas State University) and David Brown (University of Texas at Austin)**[279]** *Beyond the Cultural Pale?: Contextualizing El Morro de Tulcán within Regional Earthen Mound Development in the Northern Andes*

El Morro de Tulcán is a massive earthen mound located near Popayán in southern Colombia. This structure towers over the surrounding landscape with a height of 50 meters at its highest point. This pyramid is an anomaly within the surrounding cultural vicinity, where tolas (i.e., earthen mounds) are a rare form of construction throughout much of Colombia. The closest region of tola development is in high concentrations in northern Ecuador, amongst the Caranquis and Yumbos. Research at El Morro de Tulcán has revealed some peculiar similarities in construction style, building materials, burial methods, and even grave goods with tolas from northern Ecuador; however, unlike northern Ecuador, this Colombian earthen mound was characterized by adobe brick construction. The aim of this paper is to contextualize El Morro de Tulcán within the northern Ecuadorian-southern Colombian region and to better understand the nature of this cultural isolate.

[279] *Chair***Heckel, Claire (CNRS 5608-TRACES)****[278]** *The Slow Revolution: Chronological and Geographic Variability in Ornament Assemblages of the Early Upper Paleolithic in France*

The gradual, mosaic nature of the development of symbolic material culture has become increasingly apparent due to discoveries outside of the Eurasian Upper Paleolithic. Even so, much remains unclear about the mechanisms and circumstances surrounding the production and use of personal ornaments in early societies. The idea that the intensification of symbolic behavior was the result of some sudden cognitive/behavioral shift is not well supported by current evidence, and finding more complex explanations requires a close re-examination of objects of adornment and the contexts (social, environmental, economic) of their production and use. Such examination reveals that, even in the Early Upper Paleolithic, artifacts of personal adornment (ranging from perforated teeth and shells to meticulously-carved beads in ivory and soapstone) are not universal, but subject to substantial chronological and geographic variation and to a more gradual and mosaic trajectory of development than is often acknowledged. Drawing on data from Protoaurignacian and Early Aurignacian sites in France, this paper presents patterns of chronological and geographic variation in the intensity and nature of ornament-production in these contexts and examines their implications for explanations of the emergence and intensification of systems of personal adornment on a broader scale.

Heckenberger, Michael (University of Florida)**[295]** *Pre-Columbian Agro-forestry, Production Cycles and Forest-to-forest Conversion in Southern Amazon Garden Cities*

This paper considers landscape domestication in the Upper Xingu region in the southern Amazonian transitional forests of Brazil. Archaeological research provides detailed information on major late precolumbian settlements, ca. 1000–500 B.P., within an environmental history to >30,000 B.P. and cultural history extending over the past two millennia. Late precolumbian agricultural systems involved forest farming and agro-forestry, including forest conversion within patchy, mosaic forests, including garden plots, grass fields, orchards, and successional forest rather than in clear-cutting in long-standing field areas. These high productivity systems maintained high biodiversity of tree species, including industrial plants managed in forest and wetland settings. Specific hypotheses consider alternative agro-forestry systems within long-term sustainable cycles emerging from a Garden City model of a multi-centric urbanism.

These results are considered with respect to current debate on the composition of Amazonian forests and sustainable contemporary land-use, as well as indigenous cultural heritage and land rights.

[23] *Discussant*

Heckenberger, Michael [263] see Cronen, Charles

Hedenstierna-Jonson, Charlotte (Stockholm University, Sweden) and Torun Zachrisson (Stockholm University, Sweden)

[192] *Back and Forth Along the Eastern Slave Route. Archaeological Traces of Long-Distance Trafficking*

With the expansion of the Eastern trade route during the ninth and tenth centuries, a regular contact with the markets of the Muslim world was established. Long-distance trafficking of slaves became an important commodity. It was a high risk venture that required a new level of organisation, control, and logistics. The full extent of the trafficking is not known but it included moving people and goods in both ways along a route that offered little infrastructure and difficult terrain. Trafficking of this kind would inevitably have left its mark along the route. Focusing on the trade route from eastern Scandinavia to the slave markets of the Volga Bulgar region, this paper poses the question if it is possible to distinguish the archaeology of the slave trade?

Heffter, Eric (The University of Arizona) and Dušan Mihailovic (The University of Belgrade)

[146] *The Role of Artifact Surface Scatters from the Western Morava Valley, Serbia in Understanding Human Population Movements during the Early Upper Paleolithic*

There is strong evidence for the spread of anatomically modern humans (AMH) 45,000 to 35,000 years ago in Europe using two major migration routes: a northern one along the Danube River, and a southern one leading through Bulgaria and Greece. Despite being situated between these routes and near some of the earliest AMH sites in Europe, most of Serbia and the Central Balkans seem to lack evidence of these occupations. Part of the reason for this absence of evidence may be due to limited research on this time period in Serbia. This is especially the case with open air localities and artifact surface scatters. However, in areas such as Serbia and the Central Balkans, certain lithic artifacts from these scatters can serve as indirect evidence for early AMH occupations. In the last few years, the Western Morava River Valley in central Serbia has been the focus of systematic survey and documentation of surface scatters. Survey data show that this region, while plentiful in Middle Paleolithic artifacts, lacks artifacts characteristic of early AMH. This poster discusses possible reasons for such a disjunction in the early AMH archaeological record of central Serbia and the surrounding region.

Heilen, Michael (Statistical Research, Inc) and Monica Murrell (Statistical Research, Inc)

[64] *An Experimental Project to Conduct Digital Survey for Ring Midden Features using Aerial Lidar Data*

This poster presents an experimental research project performed for the U.S. Bureau of Land Management's Permian Basin Mitigation Program exploring the use of aerial lidar data to identify and document ring midden features. The project was carried out in three study areas in southeastern New Mexico situated along the eastern foothills of the Guadalupe and Sacramento Mountains. Previous archaeological surveys indicate that ring middens are common along rocky escarpments in the piedmont zone and suggest that thousands of these features may be located within the study areas and adjacent areas. The unique shape and prominence of ring middens suggested these features could be identified and analyzed using remote sensing techniques. Aerial lidar data were obtained and processed to create high-resolution topographic models and visualization datasets for each of the three study areas. A sample of each study area was digitally-surveyed using GIS to identify ring midden features. A subsample of these were ground-truthed and thoroughly documented during field verification efforts. The results of this study provided a better understanding of the distribution and morphology of ring midden features in southeastern New Mexico and showed that many, but not all, could be reliably identified using digital survey methods.

Heilen, Michael [180] see Ciolek-Torello, Richard

Heiser, Kasey (Binghamton University)

[90] *Ritual Apprenticeship? A Case Study from The Eastern Finger Lakes of New York State*

The Early Woodland Period in New York state is a unique time period with many changes from the preceding Late Archaic and Transitional periods. Many of the western Finger Lakes were not only used for their abundant resources, but were integral parts of the landscape used as ceremonial spaces. We know much less about the role of the eastern Finger Lakes, but the Canadatego Lake I site can shed new light on the role they played. Excavations conducted as part of a Cultural Resource Management project produced a unique lithic assemblage that suggests the lake or the specific site itself played a greater role than just subsistence. Caches of bifacial blades in mortuary contexts became highly standardized and distributed during this time period. Based on preliminary analysis, The Canadatego Lake I site appears to be a cache blade production site where a mastercraftsman worked alongside one or more apprentices. Skill differences are reflected in the vast amount of debitage and less abundant bifaces recovered at the site. In one distinct area, over 5,500 flakes and dozens of bifaces were recovered. Apparent in the debitage is a skill level not seen in the discarded bifaces.

Heitman, Carrie (University of Nebraska-Lincoln), Worthy Martin (University of Virginia) and Stephen Plog (University of Virginia)

[261] *Legacy Records and Digital Innovation: The Chaco Research Archive and Beyond*

Over the last 12 years, the authors of this paper have been involved in a range of digital curation activities pertaining to legacy records and the integration and manipulation of those data to create new knowledge about the past. Primarily, we have worked together to create the Chaco Research Archive (CRA) and a variety of complementary projects including a mobile application and, more recently, the Salmon Pueblo Archaeological Research Collection (SPARC). In this paper, we describe the creation, maintenance, and preservation aspects of the CRA and SPARC; outline nascent efforts focused on the digital curation of Ohio Hopewell legacy collections; and review our involvement in discussions of digital heritage ethics. In sum, we outline how these projects have and continue to add value to existing collections and review the challenges that lie yet ahead.

Heller, Eric (University of California Riverside)

[209] *Power, Placemaking, and the Production of Sacred and Political Landscapes at La Milpa North, Northwestern Belize*

Although ethnographic and ethnohistoric sources offer insights into the practices of producing political and sacred landscapes among contemporary and colonial era Maya, the scarcity and separation in time and space of written sources from most Classic Period contexts complicates the examination of

placemaking strategies in more ancient settings. In the near absence of written sources, landscapes, which are inscribed by built environments and the material remains of inhabitation, may be read as texts to discern ancient practices used to produce meaning and make places. Integrating traditional archaeological methods with digital reconstructions and phenomenological approaches, this paper explores the deliberate efforts of ancient Maya elites to control processes of placemaking at the site of La Milpa North, northwestern Belize. La Milpa North, a Late to Terminal Classic hinterland palatial compound, functioned as an important node within sacred and political landscapes of the La Milpa polity. Through analyses of avenues of movement, arrangements of buildings and monuments on the landscape, and the placement of features within structures, La Milpa North can be read as a text, or perhaps multiple texts, each designed to craft embodied experiences of place and convey subtly divergent meanings to a diverse array of interactants.

Helmer, Matthew (SWCA Environmental Consultants)

[56] *Early Horizon Foodways and Settlement Nucleation: Preliminary Insights From Samanco, a Maritime Center in the Nepeña Valley, North-Central Peru*

This paper examines the relationship between foodways and settlement nucleation at Samanco, a maritime center located in the Nepeña Valley littoral. Samanco comprises hundreds of orthogonal stone structures agglutinated into compounds spanning over 40 hectares. The site is similar to several other contemporary settlements in Nepeña, interpreted to be part of an integrated peer network. Excavations at Samanco yielded extraordinary amounts of food refuse, including mollusk, fish, faunal, and plant remains, all of which have been preliminarily analyzed. Results indicate that rather than being a specialized maritime community, Samanco residents relied on intensive exploitation of a variety of plants and animals. Excavations documented plant cultivation along stone terraces just below the site, on-site rearing of animal domesticates including camelids, net-based fishing focused on large-scale harvesting of smaller fish species, and shellfish exploitation along rocky and sandy outcrops of Samanco Bay. Preliminary results suggest that Early Horizon maritime centers were able to live with considerable autonomy as related to foodways, and that trade was more localized within lower-middle valley pockets. More broadly, the results bring important insights into the ways in which non-state complex societies were able to develop early urban life forms through the production and distribution of food.

Helmke, Christophe (University of Copenhagen) and Ismael Arturo Montero García (Universidad del Tepeyac)

[294] *A la sombra del Gólgota: Observancias rituales en el Cerro de la Estrella del Periodo Clásico hasta hoy*

El ritual calendárico conocido como la ceremonia del Fuego Nuevo era en muchos sentidos el rito fundamental de las culturas del altiplano central de México. Aquí, examinamos este ritual y su conexión a las cuevas, como se manifiesta en el Cerro de la Estrella, donde la última ceremonia del Fuego Nuevo fue celebrada por los mexicas en el año 1507. Sobre la base de las continuidades en el arte rupestre y las evidencias arqueológicas sugerimos que ceremonias del Fuego Nuevo ya se celebraban en el Cerro de la Estrella durante el Epiclásico (c. 750–950 d.C.), si no durante los últimos siglos del Clásico Temprano. Se presentan los resultados de las investigaciones y se contextualizan nuestras conclusiones en relación con las fuentes etnohistóricas que pertenecen a la ceremonia del Fuego Nuevo.

Helton, Erin [168] see Goodmaster, Christopher

Hemmings, C. (Mercyhurst Archaeological Institute MAI), J. M. Adovasio (Mercyhurst Archaeological Institute MAI), A. E. Marjenin (Mercyhurst Archaeological Institute MAI), F. J. Vento (Mercyhurst Archaeological Institute MAI) and A. Vega (Clarion University of Pennsylvania)

[159] *The Old Vero Man Site (8IR009): Current Investigations Indicate a Late Pleistocene Human Occupation*

Recent work near Sellards's 1916 excavation demonstrates that the 8IR009 stratigraphy is more complex, and better preserved, than previously described. The modern excavations in 2014 and 2015 have recovered thermally altered bone and sediments along with charcoal from anthropogenic surfaces that range 14,000–11,100 cal yr B.P. in age. To date, 50 m² have been excavated to mid-Holocene-age horizons, and Pleistocene-age thermally modified materials have been recovered in a ca. 28 m² area adjacent to a probable hearth. Continued archival research has relocated specimens and documents (including Sellards's original notebooks) from the 1913–1917 project, permitting spatial correlations between existing landmarks and the original excavations. All of the available evidence indicates that Sellards was correct about the co-occurrence of extinct Pleistocene fauna with evidence of an anthropogenic presence at the Old Vero Man Site.

[159] *Chair*

Henderson, John [47] see Hudson, Kathryn

Hendrix, Jillian [120] see Chenvert, ErinMarie

Henebry-DeLeon, Lourdes

[266] *NAGPRA Human Remains Inventory: Making Our Work More Visible*

In 2008, Central Washington University NAGPRA Program and the Columbia Plateau Tribes created a more visible, participatory osteobiography process. CWU let go of the "culture of secrecy" around our NAGPRA human remains documentation process and found the benefits outweigh fears. The change showed the tribes what we really do and generated research questions from Tribal representatives.

Henrikson, Suzann [113] see Byers, David

Henry, Edward (Washington University in St. Louis)

[17] *Interaction Spheres or Networks of Participation? Organizing Institutional Complexity in Adena-Hopewell Societies of Kentucky's Bluegrass Region*

Since the 1960s, Joseph Caldwell's notion of the interaction sphere has endured as a global framework through which archaeologists interpret regional systems of trade and exchange. However, a tension exists in this framework between the homogeneous and heterogeneous nature of exchanges within overlapping territories. Implied in the Interaction Sphere approach is that, through their interactions, autonomous social groups engage in homogeneous religious, economic, and sociopolitical institutional profiles. More recently, archaeologists working in areas of the world where the Interaction Sphere concept has been applied are discovering that societies are often organized in a multitude of non-uniform ways. I employ recent studies of institutions from

archaeology, sociocultural anthropology, and sociology to explore a notion of Participation as an alternative to Interaction Spheres. Understanding the heterogeneous ways in which humans coordinate institutional participation allows us to consider the nuances of regional trade and exchange relationships, elucidating shared and divergent principles in the organization of society. I draw upon new data from excavations at several Adena-Hopewell ditch-and-embankment enclosures in Central Kentucky to assess how collective labor events help delineate the creation of, and involvement in, networks of participation in Middle Woodland institutions across the Eastern Woodlands of North America.

Henry, Jamie (University of Wisconsin-Milwaukee)

[63] *The Orphaned Archaeological Collections and its Place in the Modern Museum: A Case Study from Tell Hadidi, Syria*

Destruction of ancient sites along the Euphrates River in northern Syria due to the construction of the Tabqa Dam and the formation of Lake Assad led to salvage excavations conducted between 1974 and 1978 by the Milwaukee Public Museum (MPM) at the site of Tell Hadidi, Syria, under the direction of Dr. Rudolph Dornemann. The 300,000 artifacts collected by the project are now housed at the MPM but this material has never been completely published. In 1991, with the retirement of Dr. Dornemann, the collection began a gradual fall into obscurity often experienced by material not intended for extensive use in programs or exhibits. Such collections present particular problems for new museum staff members who have no expertise in the geographic area from which the material was excavated. For over 35 years the collection languished in storage while institutional memory of its significance gradually faded. More recently, through collections management and programming, as well as graduate thesis projects, it has become a valuable resource for a new generation of museum professionals. This paper will present both the biography of this collection, from exciting new project to orphan collection, and will suggest strategies for rehabilitation of similar material in the process.

Henry, Edward [132] see Kidder, Tristram

Hepp, Guy (University of Colorado)

[135] *Movement of Goods and Ideas in Early Formative Western and Central Mesoamerica: New Evidence from Coastal Oaxaca, Mexico*

For decades, scholars have discussed Mesoamerica as a land characterized by two ancient linguistic and cultural traditions: Mixe-Zoque to the southeast, and Otomanguean to the west. Recent evidence from the initial Early Formative (2000–1500 cal B.C.) village site of La Consentida in coastal Oaxaca suggests that early “Red-on-Buff horizon” ceramics of Otomanguean-speaking peoples compete temporally with the earliest southern pottery traditions, such as that of the Soconusco region’s Barra phase (1900–1700 cal B.C.). In this paper, I discuss the movement of goods and ideas between the people of La Consentida and its interaction partners, both near and distant. With particular attention to ceramic and lithic evidence, I suggest that La Consentida was a village of the Otomanguean tradition, and that the site’s Tlacuache phase (1950–1500 cal B.C.) ceramics exemplify early Red-on-Buff pottery. While pottery forms, iconography, and obsidian exchange evidence indicate extensive interaction with peoples of western and central Mesoamerica, La Consentida was also in contact with communities to the southeast. I thus conclude that the aforementioned linguistic and cultural “boundary” was a porous one. I therefore agree with other scholars who have suggested that Mesoamerica was a land defined in part by far-reaching interaction, exchange, and mobility.

Herbig, Alexander [223] see Bos, Kirsten

Herckis, Lauren (Carnegie Mellon University)

[77] *Marine Fossils and Domestic Ritual in Maya Commoner Households: Two Neighborhoods in the Classic Maya City of Palenque*

Marine fossils carried an important symbolic load for elites in the Classic Maya city of Palenque. Recent excavations demonstrate that marine fossils were intentionally employed in a variety of ways by commoners in hinterland domestic contexts, as well. Despite a shared symbology, such use varied across the landscape: inhabitants of different neighborhoods had different practices surrounding these materials. The special significance of marine fossils in commoner households is particularly evident in the preparation of riverine resources for consumption and in domestic ritual. It is particularly notable during the Late Classic, a time when marine fossils were being incorporated into monumental architecture and ritually significant contexts in the city center. The current paper presents a discussion of the functional and ritual uses of these objects. It additionally explores marine fossils as a lens through which to reveal the role of the city in hinterland identity and vice versa, as commoners in the hinterland of Palenque simultaneously performed their affiliation with the city and with the sacred, and elites in the center performed their affiliation with the people of the broader region.

Heredia, Verence [169] see Martínez Rojo, Izziar

Heredia Espinoza, Verence Y. [27] see Antorcha Pedemonte, Ricardo

Heredia Espinoza, Verence (El Colegio de Michoacan)

[101] *What the “Teuchitlan Tradition” is, and What the “Teuchitlan Tradition” is Not*

Recent full coverage systematic surveys in the Tequila region have produced new and significant data to understand the nature of the well-known Teuchitlan tradition which has been variously described as a state-like society, a segmentary state, and a chiefdom. The evidence presented for these various models remains shaky and speculative. Here, I evaluate and test the current evidence, including the published literature, while providing empirical data from the region. Then, I interpret these data in light of a processual model on the character of this complex society and its political economy.

[101] *Chair*

Hermes, Taylor (University of Kiel), Michael Frachetti (Washington University in St. Louis), Farhod Maksudov (Uzbekistan Academy of Sciences), Alexei Mar'yashev (Kazakhstan Academy of Sciences) and Paula Doumani Dupuy (University of Kiel)

[134] *Tethered, Ad Hoc, Resilient, or Structured? An Isotopic Investigation of Pastoral Strategies in Montane Ecosystems of Central Asia*

This paper focuses on tracking the mobility and diets of domesticated animals using isotopic analysis. We present two archaeological contexts from mountain regions of central Asia: 1) A ninth–tenth century (medieval) iron smelting town located at 2,000 masl in the Zaamin Mtns. of Uzbekistan, and 2) a series of Bronze Age (2500–1200 B.C.E.) pastoral settlements located between 900 and 1500 masl in the Dzhungar Mtns. of eastern Kazakhstan. We are curious about pastoral productivity as it relates to social organization and cultural traditions across ecological gradients. We expect the case of Bronze Age

pastoralists will show a diffuse and highly variable pastoral industry which may have provided more resilience to socio-ecological changes, resulting in a high degree of variability in social interaction. For the medieval case, we expect that a centrally organized economy, like iron metallurgy, would result in a greater demand for pastoral foodstuffs and likewise would structure pastoral management, resulting in more rigidity in socio-ecological adaptation and more environmental degradation. The differences between these two examples are important for understanding the interface of herd management and economic organisation across agricultural landscapes of high socio-ecological dynamism.

Hermitt, Elijah (Pennsylvania State University) and Kirk French (Pennsylvania State University)

[235] *The Palenque Pool Project: Preliminary Investigations into Monumental Construction Costs*

The Palenque Pool Project began excavations of the largest pool of the Picota Group in the Classic Maya site of Palenque in 2014. This group is located 1 kilometer from the Palace on the western edge of the site. Although the function of the pool is still unknown, its placement adjacent to one of Palenque's two stelae and its similarity to modern Maya examples suggests ceremonial use. As a part of the 2015 field season, samples were taken from two regions that appear to have been limestone quarries. The first possible source of stone is situated roughly 275 meters southwest of the Main Picota Pool. The second, which can be found about 350 meters to the southeast, lies directly uphill from the Templo Olvidado in the Piedras Bolas Group. These samples have been comparatively analyzed using X-ray diffraction (XRD) testing with sections extracted from cut stone found in and around the pool. This is the first of many steps in developing a comprehensive analysis of the monumental construction cost of the pool and the connected aqueduct system.

Hernandez, Javier [110] see Gonzalez, Albert

Hernández Álvarez, Héctor [100] see Alexander, Rani

Hernandez Sarinana, Daniela (Department of Archaeology, Boston University), Gina Buckley (The Pennsylvania State University), Doug Kennett (The Pennsylvania State University), Brendan Culleton (The Pennsylvania State University) and David Carballo (Department of Archaeology, Boston University)

[129] *New Research on Ceramics and Chronology from the Tlajinga District*

The Proyecto Arqueológico Tlajinga Teotihuacan (PATT) undertook two excavation seasons in the southern district of the city known as Tlajinga. These have provided new information concerning the growth of the city southward and life in residential apartment complexes. Tlajinga comprises a group of residential neighborhoods where commoners lived and engaged in both local and city-wide interactions. Analysis of ceramics from the project provides an understanding of the temporality of household practices and the city's extension processes.

By examining the ceramic artifacts obtained from compounds 17:S3E1 and 18:S3E1, as well as the southern extension of the Street of the Dead, we discuss new insights into the ceramic sequence and other chronological considerations. Using high precision Accelerator Mass Spectrometry (AMS), we evaluate the radiocarbon (¹⁴C) assays provided by wood charcoal and bone samples to establish dates and occupation phases. We correlate these lines of evidence to provide preliminary conclusions regarding urbanization of the south of the city and the household practices that took place in Tlajinga.

Hernández Venegas, Maryam (Maryam Hernández)

[14] *Spatial Analysis of Anthropogenic Landscapes, A Research Tool for Natural and Cultural Heritage Protection: San Jorge River Valley as a Study Case*

The archaeological research on San Jorge has focused on the identification and characterization of the various structures comprising hydraulic adjustment systems such as canals, ditches, ridges, and mounds. Such identification has been accompanied by the spatialization of their features most significant and the interpretation of historical and cultural processes that have accompanied the construction, use, and abandonment of such structures. However, this work has also neglected the study of the current state of these structures and there is a need for clear guidelines for using and preserving this cultural heritage. Therefore, this research is an attempt to understand how current ecosystems reflect different historical processes of appropriation of territory. Sustainable development is coupled with the recognition of historic forms of construction and appropriation of territory from ancient times to the present, only the recognition and analysis of these dynamics allow us a real understanding of the possibilities of utilization of diverse ecosystems whose current use is far from preservation.

Herr, Sarah (Desert Archaeology, Inc.) and J. Scott Wood (Tonto National Forest (retired))

[66] *Recent Research on Western Apache Roasting Pits*

Hundreds of western Apache roasting pits have been documented by archaeological surveys in central Arizona, but prior to A.D. 2000 few had been excavated. These large, visible, accumulations of fire-cracked rock and dark soil are essentially the only enduring western Apache modifications of the physical landscape and the best candidates for planned research on past western Apache experience, as pre-reservation sites and features in the region are often far more subtle. Two large roasting pits, similar in their surface appearance, were excavated as part of the on-going State Route 260-Payson to Heber project, substantially augmenting available information. We present the results of the new and previous fieldwork and analyses, compare those with investigations of earlier Hohokam roasting features in the same region, and draw on ethnographic and historical documentation to explore the potential of these features to answer questions about chronology, land use, foodways, and cultural persistence from the pre-reservation to post-reservation period.

Herrmann, Nicholas [7] see Zaleski, Sarah

Herrmann, Edward (Indiana University Department of Geological Sciences) and Rebecca Nathan (Indiana University Anthropology; Crow THPO office)

[123] *Where Men Get Their Meat: Predicting Jump Locations at the Grapevine Creek Buffalo Jump Complex*

Buffalo jumps have long been part of Crow oral histories. In 1962, at Grapevine Creek in Montana, Joseph Medicine Crow recounted oral histories to identify two buffalo jumps and associated drive lines above cliffs overlooking the floodplain. In 2015, a team of archaeologists and Crow tribal monitors from the Tribal Historic Preservation Office employed geoarchaeological methods to investigate whether bison bones might be preserved in primary context in the drainage. We focused on recorded oral histories of land use at Grapevine Creek, and incorporated GIS mapping to visualize topographic landscape features and prehistoric site distributions in order to predict where additional buffalo jumps might be found. The resulting model uses oral history documents, digital elevation models, geologic and soil maps, site distributions, chert extraction locales, and prehistoric trail locations to predict buffalo jump

site locales. In a relatively small portion of the drainage, our team identified two additional buffalo jumps and drive lines spanning 2,000 years. Both the oral histories and predictive model suggest that other jumps may be present in the Grapevine Creek drainage.

Herrmann, Corey (Colorado State University)

[279] *Culture at an Andean Crossroads: New Analysis of Chorrera Ceramics from the Jama River Valley, Manabi, Ecuador*

The archaeology of Late Formative Ecuador (ca. 2800–2000 B.C.E.) remains only partially explored and understood, especially when compared to studies of contemporary cultures in the Andes of Peru and Bolivia. However, ceramics looted from these contexts suggest a vibrant and complex array of cultures in this region. Excavations in the Jama River Valley of northern Manabí, performed in the early 1990s but largely unpublished, explored multiple sites pertaining to the Chorrera style, one of Ecuador's most stunning and poorly understood cultures.

This paper synthesizes results of recent modal ceramic analysis of the materials recovered from these excavations, with the intent of comparing results from northern Manabí to prior modal analyses of Chorrera ceramics from the Guayas region. This research will motivate future study in the Jama River Valley, as it begins a renewed effort to understand the nature of Chorrera's cultural hegemony and its connections to coastal Colombian and Peruvian contemporaries. Bringing more archaeological contexts into discussions of Late Formative Ecuador also serves to better inform and unite the narrative of Ecuadorian museum collections with the region's archaeological studies.

Hertfelder, Paula (Binghamton University)

[66] *A Spatial and Predictive Model for Archaeological Sites in the Lincoln National Forest, New Mexico*

The Lincoln National Forest has produced a wealth of GIS data on archaeological sites in southeastern New Mexico. This data has not yet been analyzed. This poster presents a predictive spatial model of archaeological sites on the Lincoln National Forest. In this project, I have developed a predictive model of archaeological sites based on a statistical analysis of environmental variables and test it by withholding a sample of sites. I also examined the distribution and density of archaeological sites relative to geographic and environmental factors, site distribution, and density over time, as well as the changing use of the landscape of the Lincoln National Forest. As southeast New Mexico is a region often overlooked in archaeological research, this project represents an important preliminary exploration of spatial data in the region.

Herzog, Irmela [282] see Yeppez, Alden

Hicks, Keri (USDA Forest Service Alaska Region)

[165] *Fish Traps, Kayak Surveys, Culture Camps—NHPA in Alaska National Forests*

In an effort to meet the spirit of the NHPA, USDA Forest Service Alaska Region has a long history of collaboration and partnering with a wide variety of tribal, state, federal, not-for-profit, and educational entities, institutions, agencies, and volunteers throughout the state and beyond. The Alaska Region consists of the two largest national forests in the system, totaling 21.9 million acres. Over the last 18 years, the Ketchikan-Misty Fiords Ranger District (KMRD), located on the Tongass National Forest in southeast Alaska, has been conducting annual Windows on the Past sea-kayaking expeditions and a cooperative educational program with the University of Alaska Southeast-Ketchikan. Through this program, volunteers and students have helped to locate and document 59 new pictograph sites, bringing the total number of rock paintings to 65 on the KMRD and representing 58 percent percent of the state's known pictographs. A current example from the Chugach National Forest located in southcentral Alaska includes an annual culture camp with the Sovereign Nation of the Kenaitze and Applied Archaeology International; Kenaitze youth and elders, and representatives from traditional owner groups from western Australia participate in projects to mitigate damage to village sites as part of an ongoing exchange program to share cultural knowledge.

Hicks, John (Univ. of Illinois at Chicago/The Field Museum)

[219] *Ampare y Perjuicios: Land and Legality in a Colesuyo Village during the Colonial Period*

Land tenure is a prominent theme in the study of political and economic transition during the Spanish Colonial Period (A.D. 1550–1824) in Peru. Previous investigations have tended to focus on the concentration of land ownership into the hands of the ethnically Spanish elite minority, first through encomienda and later through the evolution of haciendas. However, native Andean communities were just as active in engaging the legal system to delineate their holdings and defend them from encroachment. My presentation outlines an early eighteenth century case brought by the citizens of the Village of Estique, located in the precordillera of modern-day Tacna, seeking legal protection and damages from squatters and trespassers, primarily from the nearby Village of Tarata. I discuss this case within the context of land use and rights in the Colesuyo region during the Colonial Period.

Hicks, Katherine

[284] *Using GIS to Investigate Mortuary Practice and Identity at the Historic Spring Street Presbyterian Church, Manhattan*

This paper focuses on the use of a geographical information system (GIS) as a tool to identify the distribution and association of mortuary artifacts and skeletal remains within the Spring Street Presbyterian Church burial vaults (ca. 1820–1846). The GIS study presented here is one component of a microhistorical approach to exploring a nineteenth century neighborhood in New York City's 8th Ward during a period of rapidly changing urban, social, and economic landscapes. Viewing the city through the lens of this radical abolitionist church congregation provides an avenue of inquiry that considers these changing landscapes with regard to the social, religious, and mortuary ideologies espoused by the Spring Street Presbyterian Church. By spatially reconstructing the Spring Street burial vaults, this GIS assists in the identification of patterns associated with the demographics of the interred congregants, both in the distribution of the interments and artifacts within the vaults, as well as how those spatial relationships reflect identity and mortuary custom as practiced by the Spring Street congregation.

Higelin Ponce De Leon, Ricardo (Indiana University Bloomington)

[169] *Cultural Modification of Human Remains at Cerro Jazmín, Mixteca Alta*

Bone modification in human remains is a common practice among ancient civilizations. In Mesoamerica, important cultural modifications on human bone have been reported, such as cranial deformation, dental modification, groves in long bones, and mandibles used as ornaments. In Oaxaca, within the Valley of Oaxaca, some of these cultural modifications of human remains have been dated to the middle Formative Period in the Rosario Phase (B.C. 700/500). Meanwhile, cultural modifications, such as cranial deformation in the Mixteca Alta, have been reported since the Late/Terminal Formative (B.C. 250/A.D. 250). This study explores the diversity of bone modification at the Cerro Jazmín, Mixteca Alta, in the Late/Terminal Formative and Early Postclassic periods, and sees how these modified human remains could be related to social status from the context that were found. In addition, in the

process of integrating these data, it will be necessary to identify the techniques used to modify the bones, hypothesizing the possible tools that were used. Evidence of bone modification at this site is based on recovered remains that display different types of cranial deformation, dental modification, and grooves in long bones, cremation, and fragments of the cranium used as ornaments.

Higelín Ponce de León, Ricardo [236] see Bellomía, Valeria

Hilbert, Lautaro Maximilian (University of Exeter), José Iriarte (University of Exeter), Eduardo Góes Neves (Universidade de São Paulo) and Francisco Pugliese (Universidade de São Paulo)

[49] *Investigating Plant Management in the Tucumã (Pará-Brazil) and Monte Castelo (Rondônia- Brazil) Shell Midden using Phytoliths Analysis*

This paper will address and evaluate the micro botanical remains of the Monte Castelo (9343 cal B.P.) shell mound in southwestern lowland Amazonia (state of Rondonia) and the sambaqui do Tucumã (7,000–4,000 B.P.) located on the southeast lower Amazon River (state of Pará). The focus in identifying and evaluating the floral dietary peculiarities of these specific precolombian settlements from the principle that the south and southeast Brazilian shell mound occupants are known to have had a broad-spectrum diet based on the exploration of their environment. The mound inhabitants are referred to within modern dietary studies as fisher-hunter, mollusc and plant gatherer societies. However, the presence of plant processing tools collected in the previously mentioned sites (Monte Castelo and Tucumã) leads to the main question that guides this research: is it possible to comprehend the mound inhabitants of Monte Castelo and Tucumã as part of an agricultural sustainable society?

Hilditch, Jill [214] see Knappett, Carl

Hill, David (Metropolitan State University of Denver)

[41] *Using Petrographic Analysis to Identify Pottery Production: Shoshone Pottery Making at the Ravens Nest (48SU3871) Southwestern Wyoming*

Petrographic analysis has been commonly used to identify trade in ceramics and stone tools. At the Raven's Nest site petrographic analysis was used to characterize the compositional variation in the ceramic assemblage recovered during excavation. The homogeneous nature of the ceramic pastes of the assemblage prompted additional petrographic study of local soils and geologic outcrops. Comparison of the local resources with the ceramics indicated the possibility for the local production of pottery at the site. A high concentration of kiln wasters and the recovery of a unique ceramic vessel support the identification of Ravens Nest as a location for the production of pottery by the Shoshone.

Hill, Erica (University of Alaska Southeast)

[108] *A Relational Geography of Humans and Animals in the Bering Sea Region*

New approaches to animal geography have rapidly emerged over the last 20 years and have challenged accepted views of human–animal relations in a variety of contexts. While archaeologists studying past relational ontologies have explored the spatial components of human interactions with animals, so far archaeology has not explicitly engaged with animal geography. This paper investigates how the “new” or “third wave” animal geography (Urbanik 2012) might inform our understanding of the human past. Using archaeological, ethnohistoric, and ethnographic data from the Bering Sea region, I explore how Yup'ik and Inupiaq Eskimo constructed, traversed, and maintained boundaries between human and animal worlds, focusing on the definition of human spaces relative to those of animals and on liminal spaces where land met water and ice.

Hill, David [123] see Trabert, Sarah

Hill, Rebecca (Tulane University)

[127] *Over the Hills: Decline and Abandonment of the Bolonchén District*

This paper examines the final decades of the Terminal Classic and the beginning of the Postclassic in the Bolonchén district of the Puuc region of the northern Maya Lowlands. Archaeological evidence for the decline and abandonment of the Bolonchén district at the close of the Terminal Classic Period is presented. Particular attention is given to the material remains of a late Terminal Classic population at Huntichmul, an example of a Puuc center in decline and most likely abandoned by the close of the Terminal Classic, with a comparative analysis of select archaeological contexts investigated by the Bolonchén Regional Archaeological Project (BRAP).

Hill, Allison (California State University, Northridge)

[245] *Social and Economic Implications for Identifying Basketry Production in the Californian Archaeological Record: A Case Study from the Interior Chumash Region*

Poor preservation of fiber technologies in the archaeological record has caused the importance of basketry in precolonial California society to be often overlooked. Subsequently, studies of the social and economic elements of basketry manufacture, primarily done by women in precolonial California communities, have been impacted. Despite preservation issues, the archaeological record can be used to study the socioeconomic contexts of this engendered craft production by identifying the tools used to make baskets. Through the use of experimental replication and comparative microwear analysis, it is possible to identify stone tools used to process plants for weaving material. Further, locating these tools at specific places in the enculturated landscape may indicate where people were making baskets, thus informing us about the social settings in which these crafts were produced. Here, I explore these themes in the form of a case study and present the results from a lithic microwear analysis of multiple sites in the Emigdiano Chumash territory. Situating the intangible process of engendered craft production in the archaeological record allows us to explore new questions about the socioeconomic status of basketry and basket makers in precolonial California society.

[245] *Chair*

Hill, Mark (Ball State University), Kevin Nolan (Ball State University), Mark Seeman (Kent State University) and Laure Dussubieux (The Field Museum)

[285] *Elemental Analysis of Scioto Valley Hopewell Copper*

Artifacts of copper occupy a position of prominence in the Hopewell societies of Ohio's Scioto Valley. Earspools, repousse plaques, effigy cutouts, celts, and a wide variety of other forms represent a technological and artistic mastery of the medium. These artifacts also represent the social contacts and long

distance interactions that brought copper to the Scioto Valley and yet our understanding of copper acquisition for Ohio Hopewell, and the movement of copper artifacts within the social networks of the Scioto Valley and beyond, is limited and often contentiously speculative due to the limited availability of geochemical data concerning provenance and variability. This project begins to develop the foundation for our understanding of these important social issues by examining the elemental variability of Hopewell copper through the use of laser-ablation inductively coupled plasma mass spectrometry (LA-ICP-MS). Dozens of samples from several prominent sites in the Scioto Valley have been analyzed using the elemental analysis laboratory at the Field Museum in Chicago. We explore the elemental variability in Hopewell copper across this region, enhancing our knowledge of both acquisition methods and the social processes through which copper represented important meanings and identities.

Hillier, Maria [103] see Grimes, Vaughan

Hills, Kendall (University of Illinois at Chicago)

[262] *Investigating Integrative Mechanisms among Early Tropical States*

Early archaeological discourse depicts tropical environments as unsuitable loci for the emergence of the world's "great" civilizations. Scholars now know this to be demonstrably untrue, as evidence of early complex societies with state level organization has been identified in tropical environments throughout the world. Like their counterparts of the more arid zones, amalgamation and increased integration would have been of great importance to early tropical states. In general, states seek to increase economic, socio-political, and ideological integration, which is simultaneously achieved through both vertical power relationships of inequality, and horizontal group affiliation. This paper explores early tropical state use of integrative mechanism, archaeologically expressed in the form of monumental public structures and spaces of the anthropogenic landscape. Informed through case studies from the latter part of the "Charter Era" (C.E. 800–1400) in South And Southeast Asia, this analysis explores an avenue for comparative studies of integrative mechanisms of early tropical states. Monumentality emerges as a dominant integrative mechanism, and provides an interesting stage for exploring integration from a dialectic perspective between state power and localized identity.

Hilton, Michael (Black Hills National Forest)

[165] *Preserving Our Heritage and History: Maximizing Partnerships to Professionally Archive and Manage a Sizable Forest Service Historical Collection*

The Black Hills National Forest (South Dakota and Wyoming) created the Historical Collections Archival Project (Project) to grapple with an issue that practically every U.S. Forest Service unit will eventually encounter: the proper long-term archiving of their unit's historical collections. The Project objective is to digitize all images and selected print documents from the Forest's extant historical collection. The materials are professionally archived under agreement at the Leland D. Case Library for Western Historical Studies on the campus of Black Hills State University, Spearfish, South Dakota. The collection includes an estimated 166 cubic feet of materials (64,000 items) that document the history and heritage of the Black Hills National Forest. The majority of the collection has been inventoried and properly processed. The ultimate objective is to provide free and easy access to the collections by researchers, students, U.S. Forest Service personnel, and other interested members of the American public and beyond. This paper cites notable Project achievements and stresses that Project success would not have been possible without developing multiple partnerships with local cooperators.

Himes, Sarah (Department of Anthropology, Texas State University), Maryse Beirnat (Department of Biology, Stockton University, 101 Ve), Fikremariam Sissay (Paleoanthropology and Paleoenvironment Program, Ad), David Patterson (Hominid Paleobiology Doctoral Program & Center for) and David Braun (Center for the Advanced Study of Human Paleobiology)

[181] *Landscape Stability and Paleoeecology at East Turkana, Northern Kenya: A Spatial and Temporal Analysis of Paleosol Gross Morphology and Stable Carbon Isotopes during the Upper Burgi, KBS, and Okote Members (2-1.4 Ma)*

The Upper Burgi, KBS, and Okote Members of the Koobi Fora Fm. in northern Kenya span the period between 2 and 1.4 million years ago and document some of the most important events in hominin evolution. Although previous archaeological and paleoecological investigations suggest hominins occupied specific niches within this ecosystem, we understand little about relationships between landscape variability and hominin adaptation. In this study, we combine stable carbon isotope data from fossil soils and enamel with a high-resolution reconstruction of landscape variability from the gross characterization of paleosols from 30 localities. These data assess hominin resource use and landscape dynamics through time and across space. More specifically, we focus on fossil- and artifact-rich areas of Ileret and the Karari Escarpment and find that the landscape within these two regions was extremely diverse across space, yet relatively static temporally as supported by statistically significant differences in soil morphology. Emerging patterns are mirrored in enamel isotopic ratios between these regions with taxa, particularly suids, reflecting differing dietary adaptations across space. Finally, our analyses suggest that the East Turkana landscape was highly variable in terms of landscape stability and vegetation structure, which would have resulted in a distinct adaptive scenario for Pleistocene hominins.

Hinthore, James [200] see Skowronek, Russell

Hinthorne, James [279] see Gonzalez, Juan

Hinton, Peter (Chartered Institute for Archaeologists)

[89] *Moderator*

[89] *Discussant*

Hinz, Martin [95] see Weinelt, Mara

Hiquet, Julien (Université de Paris 1 Panthéon-Sorbonne), Eva Lemonnier (Université Paris 1 Panthéon-Sorbonne) and Julio Cotom (Universidad San Carlos de Guatemala)

[96] *Time and Space at Naachtun: The Chronological Sequence, Settlement, and Land Use Patterns.*

Since 2011, a program of surveying and mapping together with a series of more than 80 test pits have been conducted during four field seasons around the monumental epicenter of Naachtun, over a large residential area covering approximately 175 ha. These programs resulted in an accurate map of constructed and empty spaces, and in a relatively complete sequence of the site's occupation, from the very onset of the Early Classic to the Terminal

Classic. The first objective of these investigations is directly related to archaeological issues, since it aims to reconstruct spatial layout of this area through time. The second objective deals with agriculture and subsistence questions: it intends to document land use pattern by identifying and characterizing the different land management features, in connection with residential units. This paper offers a diachronic presentation of the different components of the site, be they social or environmental. The idea is to reconstruct the dynamics of population according to the place where resources were managed, particularly soils and water supplies.

Hirth, Kenneth G. [129] see Buckley, Gina

Hirth, Kenneth (Penn State University), Mark Dennison (Tulane University), Sean Carr (Penn State University), Sarah Imfeld (Penn State University) and Casana Popp (Penn State University)

[129] *Obsidian Craft Production at Teotihuacan: A View from Tlajinga 17*

In 1986, John Clark published a seminal article that questioned the scale of obsidian craft production at Teotihuacan as reconstructed by the Teotihuacan Mapping Project (TMP). Clark argued that many of the areas identified as obsidian workshops from surface materials were concentrations of production refuse deposited as fill and eroding out of residential and public architecture. Excavations by the Proyecto Arqueológico Teotihuacan-Tlajinga (PATT) in 2013 explored the stratigraphic relationships in Tlajinga 17, a domestic apartment compound in the southern portion of the city where the TMP had identified the presence of a small obsidian workshop. This paper evaluates the subsurface contextual associations of obsidian production debris with the residential architecture to determine if surface indications of obsidian production represent in situ craft activity. The excavations provide the first empirical attempt to evaluate the accuracy of TMP model of obsidian craft production and what it implies about the organization of the city's ancient urban economy.

Hirx, John [121] see ONeil, Megan

Hitchcock, Robert, Amber Johnson (Truman State University) and Luke Edwards (Truman State University)

[94] *Macroecological Analysis of Recent Kalahari Site Structure*

In the 1980s, Lewis Binford (1931–2011) started an analysis of hunter-gatherer site structure that was later put on hold in order to organize ethnographic and environmental data to use in the analysis (Binford 2001). Although the frames of reference were constructed, Binford never completed his analysis of site structure. This poster represents an initial attempt to realize Binford's vision of a controlled analysis of site structure at a large regional scale using data he organized for this project and data organized more recently by Robert Hitchcock. Site structure data comes from the Kalahari Desert Region of Botswana, collected over a period from August 1976 to July 2014 during a total of 17 years of work in the field. Variables include site area, distances among huts in and between clusters, numbers of occupants, duration of occupation, seasonality, facilities, and presence of domesticated animals. Key variables in the Kalahari include location, temperature, rainfall, and the presence of surface water, ground water, wild animals, plants, and domestic animals. Activities taking place in each site were recorded. Seventy maps were produced, analyzed, and compared to the findings of other archaeologists and anthropologists including John Yellen (1977), Lawrence Bartram (1993), and George Silberbauer (1981).

Hitchens, Gail (University of York)

[25] *Transformations in the Palaeolithic: Searching for the Social and Cultural Role of Neanderthal Children*

Early prehistory presents a particular challenge for investigating children, and consequently previous work has almost exclusively consisted of biological accounts of health and growth. However, as traditional views of Neanderthals are becoming increasingly overturned, it has become clear that the social and cultural role of children could be crucial in furthering our understanding of Neanderthal society, and in turn the interactions and differences with modern humans. Through investigating treatment at death (both burial and the previously unexplored role of disarticulated remains) and treatment in life (such as material evidence of cultural learning), the emerging picture contrasts sharply with the traditional view of a particularly harsh and difficult upbringing. Evidence may even suggest that Neanderthal children were central to symbolic and cultural practices at this time, and may have had an important role to play in the major transformations taking place in Europe 40–50,000 years ago.

Hlad, Tucker [149] see Capece, Matthew

Hlubik, Sarah (Rutgers University), Francesco Berna (Simon Fraser University), Russel Cutts (University of Georgia - Athens), David Braun (The George Washington University) and JWK Harris (Rutgers University)

[177] *Identifying Fire in Early Stone Age: A Study of Site FxJj20 AB, Koobi Fora, Kenya*

Fire use by human ancestors may explain changes seen in *Homo erectus* and be responsible for the development of later human species. Anthropogenic fire claims in the Early Stone Age (ESA) are disputed because many of these sites are in secondary deposits and contain no association between human behavior and fire evidence. Careful excavation producing high-resolution spatial data, detailed micromorphological analysis, Fourier transform infrared spectrometry (FTIR), and high-resolution spatial analysis can provide more information about the nature of fire evidence in the ESA. FxJj20 AB, Koobi Fora Formation, Marsabit County, Kenya, a locality dated to 1.5 million years ago, is in proximity to FxJj20 East and Main which claim to have the earliest evidence of anthropogenic fire. Here, we document new excavations utilizing multiple lines of evidence to clarify the nature of fire at FxJj20 AB. Micromorphological analysis indicates that the archaeological material at FxJj20 AB is in primary depositional context. FTIR analysis documents that there are in situ archaeological and sedimentary samples that have been exposed to fire. Spatial analysis documents the relationship between burned specimens and human activity. This research was supported by USNSF IRES grant 1358178, DDRIG Grant # BCS-1443339, Wenner Gren Gr 8984, and SSHRC #430-2013-000546.

Hlubik, Sarah [269] see Cutts, Russell

Hockaday, William C. [115] see Goodwin, Whitney

Hockett, Bryan (Bureau of Land Management) and Evan Pellegrini (Nevada State Museum)

[69] *Continuing the Search for Pre-Clovis Aged Cutmarked Bones in the Great Basin: Recent Results*

Hockett and Jenkins (2013) suggested that two bones directly AMS dated prior to the Clovis era (ca. > 13,100 calendar years ago) recovered from the Paisley Caves, Oregon, displayed stone tool cutmarks. Since this publication, additional bones were identified as possibly exhibiting cutmarks from Paisley Cave #2. In addition, in the 1950s, Phil Orr recovered a number of burned large mammal bones from Pleistocene-aged deposits in several caves flanking the eastern margins of the Winnemucca Lake Basin, northwestern Nevada, including Fishbone Cave. Bones exhibiting possible cutmarks from both Paisley and Fishbone Caves were directly AMS dated, utilizing the same methodology described in Hockett and Jenkins (2013). The results are reported for the first time in this presentation.

Hodge, Christina [215] see Nystrom, Kenneth

Hodge, Christina (Stanford University) and Camilla Mazzucato (Stanford University)**[265]** *Visualizing with GIS at Stanford University Archaeology Collections: Open for Interpretation*

GIS-based data visualization offers a dynamic, compelling tool not only for promoting on-campus collections, but also for studying and managing these resources within frameworks of engagement, openness, and reflexivity. The Stanford University Archaeology Collections (SUAC) cares for over 30,000 archaeological and ethnographic artifacts from campus lands and around the world. These items manifest a range of complex histories and present-day significances. The collections were recently re-installed on campus in an active learning/curation space. To connect collections successfully with stakeholders, SUAC must raise awareness of its existence, accessibility, and scope. SUAC also strives to engage theoretical and ethical positions within broader practices of anthropology and heritage. To these ends, this poster uses GIS data to illustrate the composition, origins, and activities of SUAC's diverse collection. GIS also permits querying and arranging collection data according to different attributes with the opportunity to focus on singular objects or aggregates, blending qualitative and quantitative content. Thus, this technology responsively illustrates the interconnected and ever-changing nature of SUAC as a living collection, highlighting spatial/cultural components and development through time. This digital humanities project provides a useful product for SUAC outreach efforts and, for curators, managers, and users alike, reveals new insights about the collection itself.

Hodgkins, Jamie [278] see Meyer, Dominique

Hoffecker, John (INSTAAR) and Vance Holliday (University of Arizona)**[16]** *Early Upper Paleolithic Horse Hunting on the East European Plain*

Between 40,000 and 30,000 cal B.P., small herds of horses were hunted in Europe. Much of the evidence is derived from the central plain of eastern Europe, including multiple sites at Kostenki-Borshchevo on the Middle Don River (Russia) and Mira on the Lower Dnepr River (southern Ukraine). These sites contain large bone beds analogous to the bison bone beds of the Great Plains, and the analysis of their depositional context and taphonomic characteristics yields information on how horse mare-bands were killed and butchered in an open landscape during early Upper Paleolithic times.

Hoffman, Brian [124] see Taivalkoski, Ariel

Hoffmeister, Kristin (Texas A&M University) and Lori Wright (Texas A&M University)**[86]** *The Origins and Identities of the Colha Skull Pit Skeletal Remains*

The lithics production center of Colha in northern Belize provides skeletal evidence relevant to ongoing debates about the role of violence among the Maya of Central America. The Colha Skull Pit (Op. 2011) dates to the Terminal Classic Period and consists of 30 individuals, represented only by cranial remains. The skeletal remains include both males and females and range in age from children to old adults. Cranial and dental modifications are prevalent in this feature and many of the skulls exhibit cut marks. This unique mortuary deposit has been interpreted in a variety of ways, ranging from sacrifice, to a reverential, ceremonial treatment of elites and planned abandonment of the site, to the systematic, violent destruction of the ruling class. We examine the origins and identities of these individuals directly using strontium ($^{87}\text{Sr}/^{86}\text{Sr}$), carbon ($\delta^{13}\text{C}$), and oxygen ($\delta^{18}\text{O}$) isotopic ratios of human tooth enamel. We evaluate variability in diet and mobility patterns during the lifetimes of the Skull Pit individuals in order to better understand the Skull Pit feature and the cultural behavior that produced it.

Höfle, Bernhard [188] see Pattee, Aaron

Hofman, Courtney [110] see Shirazi, Sabrina

Hofman, Courtney (University of Oklahoma), Torben Rick (Smithsonian Institution), Sabrina Shirazi (Smithsonian Institution/ University of Maryland) and Jesus Maldonado (Smithsonian Institution)**[160]** *Archaeogenomics and the Mammals of California's Channel Islands*

As many recent genetic and archaeological studies have shown, humans have intentionally and unintentionally moved plants and animals around the world. The California Channel Islands provide a unique environment to explore ancient translocations due to their close proximity to the California mainland, long human occupation (~13,000 years) and limited terrestrial diversity. Here, we present our interdisciplinary approach to investigating the origins of California Channel Island terrestrial mammals integrating archaeological, isotopic, genomic, and radiometric datasets to explore the role of human agency in island biogeography. We propose a number of possibilities for why ancient peoples might have introduced these taxa.

Hofman, Corinne**[220]** *Archaic Age Voyaging, Networks and Resource Mobility Around the Caribbean Sea*

This paper builds on the idea that Caribbean Archaic Age communities were highly mobile and connected. Study of fisher-collector sites in the northeastern and southern Caribbean has shown that Archaic Age communities managed extensive subsistence/resource/activity systems, involving intra-archipelagic and mainland-island voyaging. The connectivity patterns and resource landscapes of these two regions will be discussed. We see a set of vital resources, which would remain important for later Ceramic Age communities, which guided the formation of early procurement and, by extension, social networks. For

the northern Lesser Antilles, one important node is the flint sources on Long Island (Antigua). This is well evidenced at the Plum Piece campsite in the tropical forest of Saba, which record suggest a yearly cycle of archipelagic resource mobility of which the flint sources on Long Island were a crucial part. For the southern Caribbean islands, the rich marine shell resources may have fulfilled a similar role. The *Lobatus gigas* heaps at Spanish Water Curaçao evidence intensive exploitation of shellfish and preparation potentially for transport to the mainland. Using computer models of reciprocal voyaging and archaeological network exploration, new insights are put forward into the early formation of social networks around the Caribbean Sea.

[220] Chair

Hofmann, Dani [52] see Schulting, Rick

Hogg, Alan [56] see Ghezzi, Ivan

Hoggarth, Julie (Baylor University) and Laurent Cases (The Pennsylvania State University)

[288] *Climate, Chronology, and Collapse: Comparing the Classic Maya and the Roman Empire*

Increasing literature has focused on the role of climate change in the collapse of complex societies. These studies suggest that abrupt shifts in climate can exacerbate existing political, social, and economic issues by affecting the basic subsistence systems on which populations depend. Here, we compare archaeological, historic, and climate proxy data from two state-level societies: the Classic Maya and the Roman Empire. A strong focus on the impact of multi-decadal droughts from the ninth to eleventh centuries has emerged in the investigation of the 'Classic Maya collapse.' Archaeological and historic investigations on the collapse of the Roman Empire have focused less on the climatic context for the breakdown of the expansive empire in the fourth and fifth centuries. Here, we present comparative methods to identify chronological correlations between climatic change and the breakdown of political systems. We focus on compiling multiple climate proxy records and compare these data with the available archaeological and historic record to enrich our understanding of the role of climate in the political collapse of both cases.

Holcomb, Justin [184] see Fallu, Daniel

Hollenback, Kacy L. [115] see Goodwin, Whitney

Hollesen, Jørgen (National Museum of Denmark) and Henning Matthiesen (National Museum of Denmark)

[210] *Climate Change and the Preservation of Archaeological Sites in Greenland*

Archaeological sites in Greenland represent an irreplaceable record of extraordinarily well-preserved material remains covering more than 4,000 years of human history. Out of the more than 6,000 registered sites, very few have been excavated and it is anticipated that thousands of sites are still to be discovered in the many unexplored parts of the country. However, the climate is changing rapidly in Greenland leading to accelerated degradation of the archaeological sites. Since 2009, the National Museum of Denmark and Greenland and the University of Copenhagen have been collaborating in order to obtain an improved understanding of the link between climate change and the preservation of archaeological sites in Greenland. In this presentation, we will give examples of how permafrost thaw, coastal erosion, increased vegetation, and farming are threatening to destroy archaeological sites in Greenland. We will show the results from our decay studies where we have investigated how different organic materials respond to environmental changes. Finally, we will present our future research plans and elaborate on how we aim to develop new methods for locating sites at risk.

Holliday, Vance [16] see Hoffecker, John

Holliday, Vance (University of Arizona)

[16] *Discussant*

Hollinger, Eric (Smithsonian Institution), Edwell John Jr. (Tlingit Dakh'l'weidi Clan) and Robert Starbard (Hoonah Indian Association)

[266] *Repatriation Collaborations Using 3D Technology: The Smithsonian-Tlingit Experience*

Smithsonian repatriation efforts have resulted in close consultation and collaboration with tribes and Alaskan Native communities that have enabled exploration of museum resources and shared interests taking the communities and the Institution far beyond what was envisioned by most when the repatriation legislation was first enacted. In particular, the Tlingit Dakh'l'weidi clan and the Hoonah Indian Association have worked with the National Museum of Natural History to pilot collaborations using 3D digitization and replication of repatriated objects. In these cases, already repatriated items are digitized by the museum and in close consultation, replicated using 3D printing and milling technology. These collaborations show that the replication capabilities are not exclusive to museums and institutions and will rapidly be integrated into community cultural preservation/perpetuation programs. The replicas serve as important educational media for both the community and the museum and bring parties closer together, enhancing relationships, and understanding between the museums and tribes.

Holloway, Caitlin (University of Alaska Fairbanks)

[148] *An Archaeobotanical Analysis of the Upward Sun River Site, Central Alaska*

Vegetation and plant resources can impact forager mobility and subsistence strategies. However, misconceptions about the preservation of organics in subarctic archaeological contexts and underestimations of the importance of plant resources to foraging societies limit paleoethnobotanical research in high-latitude environments. This research addresses these issues with analyses of archaeobotanical remains found in hearth features from multiple components (approximately 13,300 through 8,000 cal B.P.) at the Upward Sun River site in the Tanana River Basin, central Alaska. Final results from macrobotanical and charcoal identification suggest the presence of several key taxa on the landscape while the site was occupied, including birch, willow,

Populus sp., and bearberry. This research contributes to our understanding of plant resource use among foraging populations and broadens our understanding of human-environment interaction in subarctic regions.

Holmes, Charles [21] see Potter, Ben

Holst, Melissa (University of Louisville) and Jonathan Haws (University of Louisville)

[146] *New Data on Late Magdalenian Lithic Technological Organization at Lapa do Picareiro*

Few Paleolithic sites in Portugal possess enough data to provide for a comprehensive analysis of Upper Paleolithic site function. However, Lapa do Picareiro, a cave site in the Estremadura region of Portugal, is exceptional in that it possesses continuous chronology and is continuing to produce high resolution data sets pertaining to site function, lithic technological organization, and subsistence. This poster compares and contrasts old and new lithic data sets from the late Magdalenian at Lapa do Picareiro. The comparison will focus particularly on changes in raw material use, tool function, and reduction sequence. This project contextualizes the observed patterns found in the lithic technological assemblage in the broader context of site function at Lapa do Picareiro during the late Magdalenian.

Holt, Emily (University at Buffalo) and Anke Marsh (University College London)

[257] *Water Management, Ritual Ideology, and Environmental Change in Bronze Age Sardinia*

The Nuragic culture of Bronze Age Sardinia (c. 1700–900 B.C.E.) is known for building thousands of monumental stone towers called nuraghi throughout the island. However, toward the end of the Bronze Age, Nuragic leaders stopped building nuraghi and instead constructed underground temples over naturally occurring springs. Previous research assumes that this architectural shift took place rapidly in the Final Bronze Age (c. 1175–1020 B.C.E.), representing a sudden rise in the importance of water ritual. Hypotheses accounting for the shift include an increase in the power of Nuragic leaders or a revolution in which religious leaders successfully challenged a military elite. The Pran'e Siddi Landscape Project, which investigates environment and society at a Nuragic settlement system in south-central Sardinia, has uncovered new evidence that water was ideologically important from the beginnings of the Nuragic culture, challenging the assumptions that underlie narratives of late Nuragic social upheaval. Recent fieldwork suggests that water ritual became increasingly linked to ideologies of power from the Middle through the Late Bronze Age. Rather than socio-political change, the developing political potency of water in the Siddi region may have been linked to hydrological changes that altered the locations of water sources and made water's availability appear unpredictable.

Holyoke, Kenneth (Stantec Consulting Ltd.), Susan Blair (Department of Anthropology, University of New Brun) and M. Gabriel Hrynck (Department of Anthropology, Bates College)

[85] *Hunter-Gatherer Watercraft during New Brunswick's Woodland Period: Social Implications*

For many hunter-gatherers, watercraft are crucial technologies for the transportation of humans and things, and may have had great social import. In this paper, we discuss ways in which hunter-gatherer watercraft may have been a key way by which people constituted, and in turn were constituted by, their interactions with interior waterways in present-day New Brunswick. We suggest that watercraft in this region may be one way to approach the complex question of pre-European identity on the Maritime Peninsula. The ethnographic record provides a rich record of watercraft use in the region and its importance to identity during that time. We draw on that record and archaeological data to posit the same for human interactions with watercraft during the Woodland Period.

Homburg, Jeffrey [180] see Ciolek-Torello, Richard

Hoogland, Menno L.P. [160] see Ziesemer, Kirsten

Hoopes, John (University of Kansas)

[178] *Absolute Chronology of the Early Formative Revisited: Bayesian Analysis, Radiocarbon Chronology, and the Emergence of Pottery in the Americas*

In 1987, the author's doctoral dissertation featured a comprehensive analysis of calibrated radiocarbon dates associated with the earliest ceramic complexes in the Americas towards a model for the emergence of sedentary lifeways. This resulted in a critical evaluation of James Ford's posthumously published model for the Early Formative diffusion of pottery as well as other cultural features in a region extending from the southeastern U.S. through Mesoamerica and the Isthmo-Colombian Area to the central Andes. This paper provides a detailed update on the current absolute chronology for initial ceramic technology in the Americas, applying revised radiocarbon date calibration standards and Bayesian statistical analysis to evaluate how three decades of additional, accumulated data have contributed to our models for the invention and diffusion of Formative ceramic technology, patterns of cultural interaction, and their relationship to emergent social complexity.

Hoover, Corey (University of Wisconsin - Milwaukee) and Thomas Hardy (University of Pennsylvania)

[206] *Food Consumption and Animal Exploitation at Minaspatá, Cuzco, Peru*

Minaspatá, a site located in the Cuzco Valley of the south-central Peruvian Andes, contains evidence of occupation spanning continuously from the Early Horizon through the end of the Inca Empire. In 2013, several units were excavated in order to better understand the social transformations which occurred in local populations due to colonial practices, focusing primarily on the early consolidation of the Inca heartland during the early Late Horizon (A.D. 1400–1532). Analysis of the faunal remains can shed light on the shifting patterns of food consumption, butchery, and bone tool manufacture which occurred during the various phases of occupation. The results of the securely dated faunal remains from the 2013 excavations will be presented, focusing on the changing patterns of food exploitation and increasing concentration of certain animals over time, and will be placed within a larger cultural and regional context related to the cultural trajectory of the Cuzco region from the late Early Horizon to the Late Horizon.

Hopkins, Maren [267] see Coleman, Julie

Hoppa, Kristin (University of California, Santa Barbara) and Sherri Andrews (ASM Affiliates)

[110] *Charmstones, Pendants, and other Special Objects from San Clemente Island, CA*

This poster presents information on charmstones, pendants, and other specially curated objects recovered during a recent site-recording project undertaken by ASM Affiliates for the U.S. Navy on San Clemente Island, California. I report on several rare artifacts, including four pendants (two stone and two abalone), steatite effigies, a ceramic object, and several marine mammal ear bones. These finds represent rare or previously un-recorded artifact types on San Clemente Island. I discuss the significance of these findings in relation to ethnographic and archaeological evidence from other sites on the southern Channel Islands and within coastal southern California. In particular, I examine evidence for how these artifacts may have functioned as magico-religious objects.

Horn, Sherman (Tulane University)**[288]** *Artifact Distributions, Interaction Networks, and Social Complexity: Middle Preclassic Development at Cahal Pech from a Small-World Perspective*

The temporal position of the Middle Preclassic (c. 900–350 B.C.), situated between the earliest permanent settlements and hierarchically organized Late Preclassic polities, makes it a critical period for understanding the development of complex societies in the Belize Valley and the Maya Lowlands. From 2004–2009, the Belize Valley Archaeological Project's excavations produced a trove of information on the Middle Preclassic occupation beneath Plaza B in the epicenter of Cahal Pech. Variability in platform architecture, construction sequences, caching patterns, and the consumption of local and exotic materials suggest this early community was structured in ways not easily explained by current conceptions of early ranked societies. This paper presents a synthesis of the Plaza B excavations and proposes a new model for understanding the development of complex social organization from a network perspective. Analyses of architectural investment and artifact distribution patterns suggest the Middle Preclassic inhabitants of Cahal Pech differentially participated in socioeconomic networks that integrated the early community and connected it to others within and beyond the Belize Valley. Dynamic interactions within Middle Preclassic small-world networks, which linked lowland communities within and between regions, were crucial to the development of the institutionalized hierarchy that characterized later Maya civilization.

Horn III, Sherman [237] see Howie, Linda

Horowitz, Rachel (Tulane University) and Marcello Canuto (Tulane University)**[26]** *When is Chert More Than Just Chert? Case Studies of Elite Distribution of Utilitarian Goods in Northwestern Peten, Guatemala and Western Belize*

At a basic level, the lowland Classic Maya economy was a complex web of prestige exchange, centralized distribution, and local market economies. In fact, while it is important not to consider the lowland Classic Maya economic system as monolithic, it is also as critical to understand how it articulated with the different levels of social hierarchy. Beyond this, we should also make a point of understanding the roles these specific economic systems played in the distribution of utilitarian goods among the ancient Maya.

In this paper, we will address the role of centralized distribution of utilitarian goods in the ancient Maya economy. In other words, did elites mediate resource scarcity through centralized distribution when raw materials for utilitarian goods were absent? We compare cases of differentially distributed chert resources in northwestern Peten and western Belize to understand the impact of local availability and abundance of raw materials on elites' role in resource distribution. We will address whether elites are less involved in the acquisition and distribution of utilitarian goods when raw materials are locally abundant than in cases where local raw materials are scarce.

Horton, Shannon (University of Nevada, Las Vegas) and Karen Harry (University of Nevada, Las Vegas)**[68]** *A Comparison of Ceramic Function between the Virgin Branch and Kayenta Ancestral Puebloan Cultures*

The Virgin Branch culture is the least understood of the Ancestral Puebloan branches. It is considered most similar to the Kayenta branch; however, there are significant differences between the two, particularly for the Virgin Branch settlements located in the lowland region of southern Nevada. Compared to the Kayenta people, who lived primarily in small settlements and relied on dry farming techniques, the lowland Virgin people occupied more aggregated settlements and relied on irrigation farming. In this poster, we compare data obtained from whole vessels recovered from both the lowland Virgin and Kayenta regions, to explore how these differences in settlement and subsistence patterns are reflected in the ceramic assemblages, and what the ceramic data can tell us about how these differences impacted their social organizations.

Horton, Mark (University of Bristol)**[280]** *The Hatteras Project: Late Woodland Settlement and Assimilation on the Outer Banks NC*

Hatteras Island is one of the few stable landforms on the Outer Banks of North Carolina, and archaeological survey and excavation over many years has located numerous sites particularly from the Middle and Late Woodland. Our research which commenced in 2009, and has continued annually since then, has added to this archaeological record, though a community based approach, that has enabled us to work on private property and conduct over 80 test pits and excavations. The results show that Hatteras Island had a long term and stable population, exploiting an exceptionally rich environment that was offered by the island's ecology and adjacent Sound. Most famously, Hatteras is well known for the destination of the 'Lost Colonists' of the 1587 expedition. The seventeenth–eighteenth century archaeology of the island is of particular importance in trying to understand when there was assimilation of the English colonists into this community, and whether it was able to display distinctive features through the fusion of Native American and European technologies, within an isolated community.

Hoskins, Andrew**[200]** *A Point of Order on Great Basin Projectile Typologies and Chronologies*

Archaeological sites in the Desert West are primarily open-air lithic scatters lacking organic preservation. Often, the only way these sites can be dated is via typological cross-dating using projectile points. This method of dating assumes that morphological types represent discrete and uniform time periods across large geographic areas; these time periods are based on the ages of point types at a handful of well-dated sites. Although typological cross-dating remains common, research has shown that morphologically similar points can date to very different time periods in different places. My research highlights morphological characteristics useful for distinguishing two dart point types in the eastern Great Basin (Elko and Large Side-notched), which have discrepancies in their associated age ranges across the region. Additionally, I present results from AMS radiocarbon dating organic hafting materials on dart and arrow points found across the Great Basin. These dates may be used as sub-regional reference ages for projectile types.

Houk, Brett (Texas Tech University)

[158] *Discussant*

Hovers, Erella [22] see Leplongeon, Alice

Howard, Joshua (SUNY University at Buffalo), Caroline Funk (SUNY University at Buffalo), Debra G. Corbett (Nanutset Heritage) and Brian W. Hoffman (Hamline University)

[124] *Bone Tools of the Rat Islands: Aleut Identity, Subsistence, and Interaction with Landscape and Seascape*

Aleut bone tools offer a unique opportunity to study Aleut identity, relational ecology, interaction with seascape, tool technology, materiality, and subsistence strategies. A study of the Rat Islands was conducted in 2003 and 2009 by the Rat Islands Research Project to examine the Aleut sites found in the area in order to better understand the subsistence strategies, use of the environment, and the importance of landscape and seascape to the Aleut culture. During this study, due to the excellent preservation of bone at the RAT-081 site, over 6,000 faunal remains were recovered including 500 bone tools. The bone tools date from 2,500 to 250 years ago and are made of fish, sea mammal, and bird species. The recovery of bone tools allows for an examination of the everyday lives of the coastal Aleut through perishable artifacts that are under most conditions lost in the archaeological record. Aleut bone tools in particular are under-represented in scholarly literature. The paper will discuss Aleut identity, use of bone tools, relational ecology, bone tool technology, seascape, human-animal interaction, Aleut role on the landscape, and subsistence strategies using the Rat Islands bone tool assemblage.

Howard, Jerry

[258] *Changing Attitudes and Perspectives on Public Participation in Archaeology: The Case of the Southwest Archaeology Team*

In the early 1980s, the Southwest Archaeology Team was formed under what is now the Arizona Museum of Natural History. Reacting to a need for an emergency response team to preserve information from archaeological sites, not protected by state or federal regulations, but being destroyed by development. While initially considered as outsiders and non-professionals, the acceptance of the public working on archaeological excavations quickly changed. This paper focuses on the changing attitudes and perspectives on public archaeology by both the professional community and avocational archaeologists themselves. After over three decades of work, both the strengths and weaknesses of this experiment in public archaeology are examined.

Howe, David

[200] *Projectile Dysfunction*

There is an undeniable trend of a gradual decrease in projectile point size over time. About 1,000 years ago, these points significantly change in size. Most archaeologists today posit that this sudden change has to do with the invention or adoption of the bow and arrow; however, without a large sample of preserved wooden bows, arrows, or darts, there is no way to say for certain that this notion is correct. Via a controlled archery experiment, projectile point performance and function will be tested in order to determine if there is a variable threshold at which large projectile points are no longer functional when fired from a bow, or small projectile points are no longer functional when thrown from an atlatl. Or simply: is there a specific point size or weight that can tell us the difference between these point types? Through use of a crossbow, arrows, high-speed cameras, and ballistics gel targets, these performance characteristics were tested.

Howey, Meghan (University of New Hampshire)

[174] *GIS Let Me See It: Building More Robust Models of Past Movement with Geospatial Modeling*

Geospatial technologies allow archaeologists to study past social processes at a spatial scale previously unimaginable. Here, I ask how we may realize more fully the potential created by this fact, namely that these tools let us ask questions we have never asked, nor could think of asking, before we had access to them. I explore this by focusing on one area of study with a notable amount of untapped potential: movement. Archaeologists recover material items which show people moved themselves, their goods, and even other people, constantly and over tremendous distances in the past. Archaeologists have well-developed methodological and theoretical approaches for examining the static material phenomena resulting from movement. However, geospatial technologies present us new opportunities to model movement not just based on its static remains but in its dynamic context. I propose a combination of circuit-based modeling and least cost path analysis as a means of creating a broadly adaptable analytic framework that allows for more robust modeling of movement by accounting for its duality, for both its intension and extension, within past landscapes. I illustrate this analytic approach using one case study, Late Precontact (ca. A.D. 1200–1600) earthen enclosures in the Great Lakes.

[174] *Chair*

Howie, Linda [90] see Striker, Sarah

Howie, Linda (The University of Western Ontario), Sheldon Skaggs (Bronx Community College), Terry Powis (Kennesaw State University) and Sherman Horn III (Tulane University)

[237] *Greenstone from Where? Petrographic and Microprobe Analyses of Greenstone Triangulates from Middle Preclassic Pacbitun, Belize*

Artifacts made from green-colored rocks, including but not limited to jadeites, circulated widely in Mesoamerica during the Middle Preclassic (c. 900–350) and were imbued with cosmological significance and social value from early times. "Greenstone triangulates" form a distinct subset of these artifacts that have only been recovered from Middle Preclassic settlements in the Belize Valley. These roughly triangular objects are typically made from green-colored rocks that are visibly differentiable from jadeites and are thought to originate outside the Belize Valley. Jadeite sourcing studies have identified geologic deposits of green-colored stones in the Motagua Valley of Guatemala, and non-jadeite green-stone artifacts from the Maya Lowlands are often presumed to derive from this area, although few studies have focused on accurately characterizing these materials through microscopic and/or geochemical analysis. This poster presents preliminary results from a study of eight greenstone triangulates from Pacbitun, Belize, which combined petrographic and electron microprobe analyses to characterize the rocks they were made from. Accurate identification of rock types was used to investigate potential sources for the triangulate materials through comparison with published geological studies. The results of this study suggest that green-colored stones circulated widely across Mesoamerica through complex networks of interaction and exchange.

Hranicky, Jack [274] see Hranicky, William

Hranicky, William and Jack Hranicky (Virginia Rockart Survey)**[274]** *Portable Rockart in Late Pleistocene Virginia*

This illustrated paper presents an overview of moveable artforms from the late Pleistocene era of Virginia. While fixed rockart is the major form in analytical archaeology, portable rockart is also found. This paper includes stone and clay objects that represent effigies and abstract forms. These artifacts are a survey of the several hundred recorded specimens, such as an ivory vulture head, camel image, numerous other animal forms, as well as geometric forms, and engraved and incised pieces. Several illustrated objects have excavated contexts. These artifacts can be classified as monochromatic, single object or focus, realistic/abstract forms, and portraying animalistic forms. Several illustrated specimens have ochre or bitumen coating on them. The most impressive specimen discussed is what is called the Baby Mammoth of Clarke County, Virginia.

Hristova, Lidia [63] see Hamilton-Brehm, Scott

Hruby, Zachary (Northern Kentucky University)**[212]** *When the Cat's Away: Obsidian at Rio Amarillo Before and After the Collapse of Copan, Honduras*

The architecturally diminutive, but economically robust, Classic Maya polity of Copan must have had an integral role in the production and exchange of Ixtepeque goods; perhaps even control of portions of the source itself. Indeed, after the collapse of the Copan state, Ixtepeque becomes one of the most heavily traded obsidians in the Maya world. This proverbial opening of the floodgates suggests that Copan used Ixtepeque materials primarily for local and regional exchanges, increasing its value interregionally by fixing supply. Recent obsidian analysis at Rio Amarillo, a major subsidiary site of Copan, reveals how smaller local players continued to use Ixtepeque obsidian after the collapse and integrate themselves in the burgeoning international coastal trade in the Terminal and likely the Early Postclassic periods.

Hrynck, M. Gabriel [85] see Holyoke, Kenneth

Hsieh, Ellen (Cotsen Institute of Archaeology, UCLA)**[106]** *The Chinese Trade Diasporas in Spanish Manila*

The Chinese has conducted trading activities with people who live in the Manila area before the Spanish arrived in 1571. However, the establishment of the Spanish Manila changed the regional networks and attracted much more Chinese merchants and immigrants. The Spanish colonists assigned them to live in a separated area called "Parián," which became the oldest Chinatown in world history. In this paper, the author will use the concept of trade diaspora to examine the early history of Parián. The paper will discuss how Parián and the overseas Chinese in the Philippines have been discussed by different agents and how archaeological evidences can shed light on these discussions. The author argues that although Chinese trade diasporas in southeast Asia are usually considered as the same category in relating discussions, it is necessary to contextualize each case study.

Huang, Yongsong (Brown University), James Dillon (Brown University), Samantha Lash (Brown University) and Kevin Smith (Brown University)**[217]** *Taking the Temperature of the Arctic Past: Extracting Temperature and Precipitation Information from Bacterial Lipids Deposited in Faunal Remains from Cape Krusenstern, Alaska*

Throughout his career, J. Louis Giddings explored the roles of climate on maritime and terrestrial resources and human ingenuity in adapting technologies and social strategies to exploit those resources under changing conditions. At Cape Krusenstern, Alaska, Giddings' teams identified sequential occupations based on changing maritime adaptations but had no analytical tools for directly inferring key climatic parameters during periods of the Cape's occupation. Recently, our research group discovered that a widely used class of climate-sensitive bacterial lipid compounds—glycerol dialkyl glycerol tetraethers (GDGTs)—is well preserved in ancient bones. Research has demonstrated that these bacteria-derived GDGTs faithfully record mean annual air temperature (MAAT), soil pH, and, in relatively dry regions, precipitation. Direct reconstruction of climate conditions from archaeological materials, in this case non-human biological samples, with age control provided by archaeological contexts, has the potential to allow direct inference of key climatic and environmental parameters at the time individual sites were occupied, conditions to which those sites' occupants were adapting, and changes through time. This paper examines current research on bone-derived GDGTs using archived faunal collections from Giddings' excavations of Ipiutak through late prehistoric Inupiat settlements at Cape Krusenstern to reconstruct changing climate conditions at the time of those occupations.

Hubbard, Eric (College of Wooster), Olivia Navarro-Farr (College of Wooster) and Aaron Burke (University of California, Los Angeles)**[184]** *Empire and Rebellion: Egyptian Imperialism and Insurgency in the Late Bronze Age Levant*

The wide-ranging research focused on the turbulence of the Late Bronze Age in the Mediterranean and the Levant has not yet yielded a unified narrative of how this period was experienced across the region. While some sites exhibit no sign of the infamous collapse or 'crisis,' many others exhibit rapid abandonment or destruction layers. The narrative surrounding these destructions tends to be viewed as relating to either the imperial Egyptian invasion, Israel's rising kingdom, or all manner of so-named 'Sea Peoples.' This macro-causal approach leaves fewer considerations of micro-scale incidents of local resistance/agency. Recent evidence from a New Kingdom outpost in Jaffa (Tel Yafo), excavated by the Jaffa Cultural Heritage Project (JCHP), sheds light on just such a possibility. Specifically, evidence suggests a local Canaanite resistance against Egyptian domination. In this poster, I reconsider a number of Late Bronze Age New Kingdom outposts (e.g., Beit She'an) to better gauge the intensity of Egyptian influence in the Levant and to posit the probability of local efforts to collectively resist.

Hubbe, Mark [207] see Kuzminsky, Susan

Hubert, Erell, Patrick R. Williams (The Field Museum), Lauren Monz (Northwestern University) and M. Elizabeth Grávalos (University of Illinois at Chicago)**[219]** *Ritual Practices and the Negotiation of Wari-Tiwanaku Relations at Cerro Baúl*

The presence of both Wari and Tiwanaku colonies in the Moquegua Valley (southern Peru) offers a unique opportunity to study the colonial strategies of these empires and their interactions during the first millennium A.D. Here, we more specifically explore the role of ritual practices in mediating relations between the Wari and Tiwanaku empires. We focus on a Titicaca basin inspired platform and court complex located outside of the main Wari administrative

sector of the site of Cerro Baúl, denominated Temple of Arundane. This sector, most likely devoted to religious activities, appears to be the only purely Tiwanaku context within the site. We argue that the presence of this Tiwanaku ritual complex within such an important Wari colony contributed to establishing social ties among Wari and Tiwanaku representatives and may have helped negotiate relations among various socio-political groups in this frontier area. Wari colonial strategies therefore appear to have included the incorporation of elite diversity through the coexistence of various ritual practices in particular places in the landscape.

Hubert, Erell [219] see Grávalos, M. Elizabeth

Huckell, Bruce (University of New Mexico), Timothy Rowe (Dept. of Geological Sciences, University of Texas-), Leslie McFadden (Dept. of Earth and Planetary Sciences, University), Grant Meyer (Dept. of Earth and Planetary Sciences, University) and Christopher Merriman (Dept. of Anthropology, University of New Mexico)

[65]

The Hartley Mammoth, North-Central New Mexico

A scatter of large mammal bone scrap along a shallow rill led to discovery of the Hartley Mammoth site in north-central New Mexico. Informal testing revealed a shallowly buried partial skull and a group of three rib fragments some 2 m apart. On the surface 9 m away was a small, impact-damaged Clovis point, suggesting the possibility that the mammoth had been the victim of Clovis predation. Excavations in 2015 revealed the remains of a juvenile mammoth, consisting of rib fragments, portions of the skull (including both tusks), part of the pelvis, vertebral fragments, and abundant bone scrap. The remains are contained within a remnant of a buried ephemeral stream channel, perched on an elongated slump block of Triassic sedimentary rock, 20 m below the broad Piedra Lumbre basin surface and 60 m above the Rio Puerco, a tributary of the Rio Chama. The matrix is fine sediment and at least one debris-flow deposit. Although no stone artifacts were found, more than a dozen mammoth bone "flakes" were recovered. The "flakes" are generally large and most appear to have been detached from limb bones. Studies of these specimens, the mammoth remains, plus taphonomic, chronometric, and paleoenvironmental analyses, are on-going.

Huckert, Chantal (Universidad Veracruzana)

[241]

Representaciones de la Muerte y del Sacrificio en las Figurillas del Centro de Veracruz

Con base a la cerámica que resguarda el Museo de Antropología de Xalapa, correspondiente a las culturas del Golfo en el Clásico Tardío, se propone una lectura iconográfica sobre la representación de la muerte asociada al sacrificio.

La muestra de piezas se caracteriza por estar constituida por cuerpos completos y fragmentados, además de cabezas que son una unidad en sí, y tuvieron probablemente la función de cabeza trofeo.

Se reconocen dos complejos iconográficos que configuran una narrativa visual en torno a la muerte y las maneras sacrificiales que caracterizan manifestaciones divinas.

El primer complejo es identificado por tener los ojos cerrados, sean piezas en bulto, o representaciones en bajo relieve en la vestimenta; ilustran la muerte y la sangre preciosa. El segundo da cuenta de piezas con rasgos diagnósticos que denotan el desollamiento, entre éstos los párpados caídos y la boca abierta, propios del culto a un "dios desollado", antecedente de Xipe Tótec del Posclásico.

La presentación constituye un avance del estudio iconográfico de las figurillas cerámicas del Golfo, en el MAX. Con ello se comprobará la continuidad temática

que impera en su imaginaria, apreciando e identificando la singularidad y la generalidad de sus expresiones, en un marco mesoamericano.

Huddelstan, Stephanie [124] see Marshall, Amanda

Hudson, Kathryn (University at Buffalo) and John Henderson (Cornell University)

[47]

Gesture, Identity, and Meaning in Southeastern Mesoamerica

Hand imagery carried conventionalized meanings across ancient Mesoamerica and represented an embodied semantics that was central to ancient constructions of meaning. Precolumbian ceramic imagery from northwestern Honduras reflects of this generalization and features a set of highly stylized compositions that conveyed an array of specific meanings. Figures and, by extension, the gestures made by them feature prominently in this corpus, but little attention has been paid to how these motifs function vis-à-vis broader constructions of meaning. This paper considers the place of hand forms and gestures within the imagery of the region's cultural traditions and examines the range of contexts—both corporeal and extra-corporeal—in which they occurred. Particular attention will be given to the range of gestures attested within ceramic compositions from within and around the Ulúa Valley, and to how these forms function as independent constituents that contribute to the construction and extraction of compositional meaning. Similarities with the ways that hands were treated in other Mesoamerican traditions of graphic representation, both local and foreign, will also be considered in terms of their implications for cultural interaction.

Hudson, Jean (U Wisconsin- Milwaukee)

[244]

Impacts of Behavioral Contexts on Intrasite Zooarchaeological Sampling

Intrasite spatial analysis is nothing new, however, its application to zooarchaeological remains continues to be relatively rare. A critical aspect of any archaeological analysis is an understanding of where our samples come from in terms of human behavioral contexts. Animal remains end up in many places—where daily meals are prepared and eaten, where trash is dumped, where tools and ornaments are made and used, where special events bring people together, where sacrifices and offerings are placed. How often, when the site is the desired analytic unit, are various constituent behavioral contexts collapsed? How does this merging of contexts impact interpretation? Two case studies are evaluated. In the process some of the common assumptions about critical variables of "trash rules" are reviewed.

[244]

Chair

Huertas Sánchez, Geraldine

[151]

¿Quiénes son los Huarco? Análisis de la cerámica tardía del valle de Cañete

Según los relatos etnohistóricos, los incas tras una ardua lucha de 4 años aproximadamente, dominaron al fuerte señorío Huarco, consolidando su poder con la construcción de una fortaleza. Otras fuentes hablan de Huarco como un señorío menos independiente, que integraba una confederación política conformada por los diversos grupos de la costa central que fueron conquistados.

En el presente trabajo, analizaremos la cerámica recuperada por el Proyecto Qhapaq Ñan, en el sitio conocido como "El Huarco," ubicado en el valle de Cafete, Lima. Caracterizaremos la sociedad local ocupante, antes y durante la conquista Inca, con el fin de evaluar hasta qué punto la cultura material nos muestra una sociedad fuertemente centralizada o un grupo de limitada independencia y relaciones fuertes con sus vecinos. Nuestro estudio morfofuncional inicial, así como la revisión del material publicado, nos permiten plantear de manera inicial una ocupación tardía de dos estilos foráneos, característicos de las sociedades próximas al sur y al norte, Chíncha e Ychsma, respectivamente, y pocos tiestos que podríamos caracterizar como locales. Estos estilos aparecen interactuando en los mismos contextos, sugiriendo una imagen de fuertes interacciones regionales, más que el de una sociedad cerrada.

Huff, Jenn [252] see Lape, Peter

Huff Mikiten, Alita [7] see Harding, Gregg

Huffer, Donelle

[65] *An Assessment of Archaeological Bison Remains in the American Southwest and the Wildlife Management Implications for the Grand Canyon National Park Bison Herd*

The historically introduced House Rock Valley bison herd in northern Arizona has, in recent years, migrated from the eastern Arizona Strip onto the Kaibab Plateau within Grand Canyon National Park. Bison are considered a nonnative species to the southern Colorado Plateau, and the animals adversely impact sensitive ecosystems prompting National Park Service wildlife managers to pursue their removal. Archaeofaunal evidence of bison in the Grand Canyon and neighboring regions, however, raises concern that bison may in fact be a native species. Yet this evidence had never been assessed within a zooarchaeological interpretive framework, which is critical since mere presence/absence lists of bison remains do not address the potentially complex cultural processes involved in the formation of archaeofaunal assemblages. When evaluated through inter-assemblage comparisons, a dramatic decline in relative abundance and skeletal completeness correlated to distance from traditionally understood historical bison distribution is apparent. Although the archaeofaunal evidence does not rule out the possibility that bison were present in the southwest, it does suggest that the species likely entered the region only rarely as small, dispersed herds, which is corroborated in historic manuscripts and ethnohistoric accounts.

Huffman, Thomas (University of the Witwatersrand) and Frank Lee Earley (University of the Witwatersrand)

[123] *Upper Republican and Apishapa Interaction on the High Plains*

On the High Plains of North America, geographical separation and cultural isolation were not the same phenomena. Upper Republican and Apishapa archaeological units, for example, represented separate ethno-linguistic groups, but they were not isolated. Apishapa pottery at the Wallace site (Upper Republican) and Upper Republican pottery at Cramer (Apishapa) demonstrate reciprocal interaction. We argue that the calumet ceremony facilitated this interaction, rather than residential mobility. Furthermore, the calumet network provided a foundation for multicultural residences in settlements such as Cramer that served both defensive and economic purposes. Among other things, multi-colored lithics, Black Forest silicified wood, and Upper Republican-derived Barnes pottery mark summer (Barnes) and winter (Buick) hunting camps attached to semi-permanent residences in the Arkansas River Valley.

Huggins, Kathleen (University of California, Berkeley), Paul Goldstein (University of California, San Diego) and Matthew Sitek (University of California, San Diego)

[255] *Looking for Invisible Makers Marks: The Distribution of Formative Period Sherds in Adobes at the Omo M10A Tiwanaku Temple*

This paper expands on previous work which concluded that the Omo M10A Tiwanaku temple in Moquegua, Peru, was constructed using, in some amount, adobes containing cultural materials from antecedent Huaracane populations. Exploring this data further may reveal social and ecological conditions during construction of the Tiwanaku temple at Omo M10A. Analyses will include spatial distribution of Huaracane sherds within architectural collapse, and associating these architectural collapse areas with discrete architectural features and areas. Using this evidence, we now test two working hypotheses: whether sherd inclusions indicate a preference in raw material source, possibly indicative of differential labor groups at the temple structure, or whether sherd inclusions are merely an inadvertent inclusion during adobe processing.

Hughes, Daniel

[253] *Circulating Ceramics in the Eighteenth Century*

The purpose of this paper is to examine our ability to model trade connections through the use of ceramics and quantitative methods. Ceramic collections from various eighteenth Caribbean sites will be examined through a statistical model for inter-island trade. I shall argue that consumptive patterns are knowable and testable through the archaeological record. Finally, the connections developed from the importation of various goods, such as ceramics, provide opportunities to test ideas about contested peripheries which can be seen by a means of historical data and statistical inference to understand the past relationship between global events and local acts of consumption within the Caribbean.

Hull, Kerry (Brigham Young University)

[86] *The Smoking of Bones: An Ethnographic Examination of the Maya's Use of Tobacco and Tobacco Substitutes*

Epigraphic studies have confirmed what Classic Period iconography has long shown—the Ancient Maya cultivated and smoked tobacco. Ethnographic studies among various Maya groups have brought to light a wide range of uses for tobacco, from pleasure, to healing, to witchcraft. In this paper, I will address several lesser discussed topics related to tobacco. First, I will discuss ethnographic data relating to the use of other plants that are mixed with tobacco to alter its effects or tastes. Second, I investigate tobacco substitute plants that were or are smoked by different Maya groups in place of tobacco and trace the ritual or practical motivations for each. In addition, drawing upon my own fieldwork with the Ch'orti' Maya, I detail the ritual smoking of a peculiar non-plant substance: human bones. I described this rare ritual and contextualize the practice by offering evidence for a Classic Period antecedent to this rite. Thus, I argue that while the importance of *Nicotiana tabacum* is clear among the ancient Maya, substitute materials may also have been used on specific occasions.

Hulme-Beaman, Arden [176] see Linderholm, Anna

Hulse, Eva (Archaeological Investigations Northwest), John L. Fagan (Archaeological Investigations Northwest) and Jason Cowan (Archaeological Investigations Northwest)

[155] *Settlement and the Environment in the Northwestern Great Basin*

The Holocene in the northwest Great Basin is characterized by episodes of severe drought punctuated by abundant rainfall. Prehistoric people settled widely across the area against this variable ecological backdrop. Excavations for the Ruby Pipeline project have produced a wealth of data on prehistoric settlement patterns and chronologies in the northwestern Great Basin. In this paper, multiple lines of evidence are used to reconstruct chronologies of occupation that have been obscured by post-depositional erosion and bioturbation.

Hulse, Eva [243] see Norton, Holly

Hulsey, Brannon [111] see West, Frankie

Hundman, Brittany (Georgia State), Nicola Sharratt (Georgia State University) and Beth Turner (Georgia State University)

[204] *Eating in Transition: Diet at Cerro Del Oro*

Subsistence practices during the transition from Early Intermediate Period (200 B.C.–A.D. 600) to the Middle Horizon Period (A.D. 600–A.D.1000) are crucial to understanding prehispanic life on the southern coast of Peru. As the Nasca polity waned and the Wari state began to expand, life in the coastal valleys was changing. Through bioarchaeological reconstruction of diet and health at the site of Cerro Del Oro, in the Canete Valley, the effects of demographic and subsistence changes can be examined. This poster presents osteological and isotopic data from a cemetery sample (N=58) from the site. Excavated in 1926 by Alfred Kroeber, the Cerro Del Oro material has been unstudied at the Field Museum for almost 90 years. Carbon and oxygen isotopic values from tooth enamel are compared to bone carbonate values to reconstruct diet through the lifetime of each individual. This, in combination with carbon and nitrogen from bone collagen, provide data on dietary variability. Preliminary results indicate variation in dietary composition; possibly linked to the transition between political influences.

Hundman, Brittany [219] see Gadison, Davette

Hung, Ling-yu (Indiana University)

[106] *A GIS-Investigation of the Yangshan Cemetery, Qinghai, NW China*

This paper focuses on the use of GIS (geographic information systems) to examine mortuary practice in the Yangshan cemetery (ca. 4300–4000 B.P.), Qinghai Province, northwestern China. The abundant graves unearthed in the Yangshan cemetery are valuable sources for investigating local social and economic organization. However, mortuary practice at Yangshan appears to be complicated, including graves containing single or multiple individuals, individuals deposited in extended or flexed position, burials furnished with different types of grave goods, and etc. GIS provides a powerful tool to investigate spatial and statistic relationships between graves with these different variables. This study reveals new knowledge of late Neolithic communities in northwestern China.

Hunt, Ryan (Rhodes College), Jon Russ (Rhodes College) and Stephen Carmody

[6] *Residue Analysis of Archaeological Smoking Pipes from the Southeastern US*

Chemical analyses of organic residues from smoking pipes excavated from archaeological sites in the southeastern United States provide insight into ritualistic smoking traditions of indigenous peoples. This study examined residues scraped from pipes and pipe sherds in collections at the Fernbank Museum of Natural History in Atlanta, Georgia, and the McClung Museum of Natural History and Culture in Knoxville, Tennessee. One of the primary goals was to determine whether nicotine was present in the residue, thereby expanding our knowledge of when and where tobacco was first used in the southeast. For the analyses, residues were extracted by ultrasonication of the samples in methanol/chloroform. An aliquot of the extracts were analyzed directly using GC-MS and GC-FID; another aliquot was derivatized using BSFTA with 1 percent TMCS and also analyzed using GC-MS and GC-FID. While nicotine was present in only two of the residues studied, the results suggest a complex and diverse tradition in which smoking pipes were used to smoke a wide array of natural materials.

Hunt, Alice (University of Georgia)

[14] *Ceramic Classification and Social Process*

Sir Flinders Petrie revolutionized archaeological ceramic analysis in 1904 by developing 'sequence dating'—the relative dating of strata, buildings, or tombs based on changes in formal and stylistic attributes of vessels overtime as determined by seriation. Since the efficacy of sequence dating is directly related to the quality of the typology upon which it is based, stylistic typologies and classification of ceramic have been the norm for the last century, despite their manifold limitations. In an age of readily available, high-resolution direct dating methods, there is no need for seriation dating or stylistic ceramic classification. Instead, ceramic analysis can begin to look at deeper social processes and behaviors, such as resource management, social values, and technological innovation. In this paper, we propose a morphometric, formal classification of ceramic vessels from the recent excavations at Tierras Nuevas (Manatí, Puerto Rico) to revise previous stylistic classifications and reveal human motivations and social processes at work during the Late Ostionoid/Taino Period.

Hunt, Terry [296] see DiNapoli, Robert

Hunter, Raymond and Steve Kosiba (University of Alabama)

[174] *Politics of Property: A GIS Analysis of the Shifting Value of Agricultural Land in Colonial Cusco*

Recent GIS studies of colonialism combine archival and archaeological data to understand and map changes in political economy, such as settlement patterns, land use, and population aggregations. Such studies often overlook how colonial politics centered on the transformation of value—the social significance of the things and resources that constituted social life. This paper develops a GIS method to document shifts in land value in the Inca imperial capital (Cusco, Peru), during the long process of Spanish colonization (ca. 1533–1650). The paper develops a range of GIS methods to analyze the

historical ecology of Colonial Cusco, by analyzing where the Incas developed agricultural lands, then identifying the lands that were subjects of early Colonial litigation between indigenous people, Incas, and Spaniards. The paper builds on this foundation to consider how shifts from maize to wheat production corresponded to changes in the social value of land, and discusses how changes in field types, soils, labor requirements, and agricultural-ritual institutions structured how Andean people experienced and contested Spanish Colonialism. The paper adds to our anthropological understanding of colonialism, focusing less on political domination and more on how different social actors negotiated the regimes of value of a colonial project.

Huntington, Yumi (Jackson State University)

[31] *Lost in Translation in the Formative Period: The Iconography of a Bear from the Formative Period Ceramics*

Throughout ancient Andean culture, animals and their attributes have been depicted in objects of material culture associated with religious ceremonies, political authority, and social status. So far, scholars have focused on only a few types of animals, including felines, serpents, caimans, and eagles, for their significant roles in Andean cosmology and society. One important animal has largely been neglected: the bear, which is actually a major species in the Andean habitat, and which also appears as the main protagonist of the ukuku (bear-man) story.

Despite such importance, the identification and interpretation of bear iconography in early Andean objects has been overlooked. In this article, I identify two ceramic vessels from the Cupisnique and Viru regions as portraying bear iconography and interpret their symbolism. Contextualizing these objects in history, I argue that the role of the bear, understood as ukuku, was important during the formative period but diminished with the onset of the Moche period.

Huntley, Deborah [267] see Koons, Michele

Hunt-Watts, Holly (University of Leeds)

[25] *Children of the Revolution: The Rise of Rickets in Urban Societies in 19th-Century England*

In the late eighteenth- to early nineteenth-century England, the impact of the Industrial Revolution on health was experienced by both manufacturers and workers alike, as it both changed the roles played by workers and the environment of urban living. Many of these workers would have been children, often as young as 9 years old, who found employment in factories to supplement the family income. The impact of industrialisation on the nutritional health of adults has been found in evidence such as shrinking physical statures and increases in obesity. This paper aims to explore the impact of industrialisation on the nutritional health of children during this period.

Using collections from urban sites across England, this paper will focus on skeletal indicators of nutritional health to identify the prevalence of rickets and other nutrient deficiencies during this industrial transition. It will explore the impact of various factors on childhood health, such as socio-economic status and geographical location, to create a picture of life for the nineteenth-century child.

Hurcombe, Linda (University of Exeter, UK)

[254] *Experimental Archaeology and Perishable Material Culture: Using Traditional Museums and Open Air Museums to Investigate the Missing Majority*

In living contexts, the majority of material culture is formed from organic materials, but on most archaeological sites only the inorganic elements are preserved. The perishable material culture thus forms the 'missing majority'. The fragmentary records and fragmentary remains of perishable material culture stored in museums can offer new ways of understanding artefacts made from organic materials. A mosaic approach has been used to offer new interpretations of artefacts using original museum records, published accounts and drawings from the 1800s onwards for artefacts which have not survived, augmented by rare extant fragments of types of cordage, containers, and fabrics from prehistory and informed by ethnographic data. The research has explored the use of crafted replicas and digital 3D prints to better understand and present the ancient museum objects, but it has also looked at the processes and contexts involved in manufacture and use. Experimental archaeology projects within 10 open air museums have been undertaken as part of the Openarch European Union project. The results show how an integrated approach can benefit both the archaeological interpretations of rare perishable artefacts, and the public appreciation of perishable materials.

[214] *Discussant*

Hurst, Heather (Skidmore College)

[230] *Sketching in the Shadows: Re-illustration of the Olmec Paintings of Oxtotitlán, Mexico*

Re-illustration of the well-known cave paintings at Oxtotitlán, Guerrero, Mexico has revealed important new iconographic details. The use of multispectral imaging, as well as direct observation following recent conservation work, contributed to re-visioning the artworks with increased clarity and accuracy to the originals. This paper will present new renderings of the Olmec-Period paintings and summarize observations on artistic practice and iconographic significance that resulted from this project.

[15] *Discussant*

Hurst, Stance (Museum of Texas Tech University)

[16] *Hunter-Gatherer Occupations at San Jon Site, Eastern New Mexico*

One of the hallmarks of Eileen Johnson's career was the establishment of long-term field research projects. Outcomes of this work include high quality datasets, and the development and fermentation of research ideas that can only occur from returning to the same localities year after year. The Lubbock Lake Landmark's regional research at the San Jon site (LA 6437) is an example of one of these projects. The San Jon site is located along the northwestern margin of the Southern High Plains of eastern New Mexico and associated with an extinct playa. San Jon is principally known as a Paleoindian site based on Frank C. Hibben and Frank H.H. Roberts, Jr.'s excavations in the 1940s. San Jon was a persistent place, however, occupied for most of prehistory. Over a decade of fieldwork, led by Dr. Johnson, has produced a sequence of lithic assemblages that span the prehistoric period. A lithic technological analysis from a landscape perspective examines the changing role of San Jon within hunter-gatherer landscape-use strategies across the southern High Plains. Results of this work demonstrate the importance of datasets and research produced from long-term projects.

Hurtubise, Jenna (University of Alabama), Haagen Klaus (George Mason University), José Pinilla (Museo Nacional Sicán, Peru) and Carlos Elera (Museo Nacional Sicán, Peru)

[207] *Social Identity and Mass Sacrifice: An Investigation at Matrix 101, a Late Middle Sicán Funerary Context*

We examine the social identity of the individuals buried at a Late Middle Sicán (A.D. 1050–1120) mass grave designated Matrix 101, located in the Sicán Religious-Funerary Precinct in the La Leche Valley, north coast of Peru. Our objectives are threefold: (1) to understand the social identities of the individuals, (2) to examine the complex mortuary practices that took place during the construction of the burial, and (3) to infer sociopolitical reasons for the construction of Matrix 101 and to see how they might relate to the Sicán political-religious collapse.

Body positions, grave goods, and present frequencies of biological stress allow for social identity of the deceased to be assessed. Due to the large scale of the mortuary context and apparent deliberate skeletal manipulation, preliminary research points to the special nature of Matrix 101. We hypothesize that Matrix 101 represents a mass grave that was constructed in three closely timed events surrounding an El Niño ca. A.D. 1050. We argue that the presence of burial manipulation, specific body positions, and evidence of sharp force trauma provide evidence of ritual killing. We suggest that these individuals represent Sicán elite whose identities were transformed into sacred objects during a crisis ritual.

Huson, Daniel H. [223] see Bos, Kirsten

Hussey, R (University of Florida)

[224] *Dungeons and Virtual Tours: Preserving the Mazmorras of Tetouan, Morocco*

New and economical methods of digital preservation have enabled archaeologists to both protect and increase public access to threatened heritage sites. Recent plans to rehabilitate a long sealed but structurally threatened subterranean dungeon associated with Christian slavery, The Mazmorras of Tetouan, Morocco, provided an ideal location to integrate cost-effective methods of digital preservation with municipal restoration proposals. The creation of an online virtual tour with moderately priced photographic hardware and open-source software was crucial in the creation of trust-building collaborative heritage planning for an extremely restricted historical site. The creation of an online and easily accessible virtual tour digitally preserved the dungeon's appearance preceding any restorative work. These online virtual tours were essential in transcending difficult language barriers to create a collaborative heritage management plan to work with Moroccan restoration proposals.

Huster, Angela (Arizona State University)

[237] *By Themselves They Celebrated His Feast Day: Regional Variation in Postclassic Central Mexican Domestic Ritual*

This poster examines the variation in domestic ritual practices in Postclassic central Mexico, using data from the Basin of Mexico, the Toluca Valley, and Morelos. I use cluster analysis to identify patterning in censer and figurine use, based on the functional attributes of these artifact classes (use mechanics for censers, subject matter for figurines). These clusters are then compared spatially and temporally to identify patterns based on ethnicity and the expansion of the Aztec Empire. The results show a potential division in ritual practices between primarily Nahua and primarily Oto-Pamean subregions, as well as an expansion of the Nahua pattern during the Late Postclassic.

Hutchinson, Dale [286] see Magoon, Dane

Hutson, Scott (University of Kentucky)

[26] *Understanding Variability in Distribution and Consumption in Low-Wealth Households from the Classic period*

This paper explores data on consumption of durable goods in Classic Period domestic contexts both in cities (Chunchucmil, Tikal) and rural areas (Ceren, hinterlands of Izamal and Copan). The goal is to document variation in distribution systems across the lowlands. Though some of this variation may be due to the intensity of market systems, other variation may be due to the wealth and resourcefulness of individual households and some due to long-term trends in economic prosperity throughout the Maya area.

[135] *Discussant*

Huxhold, Wayne [266] see Sievert, April

Hyde, David M. [93] see Kelley, Krystle

Hyde, David M. (Western State Colorado University) and Nadine Gray (GWR Heritage Consulting Ltd)

[93] *Form and Function of a Dual-Chambered Chultun at the Medicinal Trail Community, Northwestern Belize*

The chultun from Group H at the Medicinal Trail Community in northwestern Belize was an unsealed, dual chambered feature filled with lithic debitage and sparse ceramic evidence. The chultun was located on the southern side of the dual level Structure H-1. The chambers had doomed roofs and walls with a sill leading into the largest chamber, the western chamber. The eastern chamber was small and was more of a niche than a chamber to be entered.

Although storage is suggested by the small size of this chamber and the ability to seal the entrance, no storage vessels were recovered. This poster will compare the Medicinal Trail chultun to others in the Three Rivers Region as well to morphologically similar chultuns outside the region in order to elucidate its possible function.

Hyde, David (UC Berkeley)

[251] *Stories Past and Present: Archaeology, Lore, and Community at von Pfister's General Store, Benicia, California*

The story of the start of the California Gold Rush by the announcement of the discovery at von Pfister's General Store in Benicia, California, lives large in the contemporary community's collective memory. Archaeological excavations and historical research at von Pfister's has shed light on daily life at the general store and has served to historically and socially contextualize the popular story. This paper explores the origins of the story and the ways the narrative has shaped a larger community identity based heavily in its historical relevance to local and state development. Also explored are the ways in which local historic preservation efforts at the von Pfister site have been mobilized to draw attention to local traditions and challenge rapid Bay Area development.

Hyziak, Alyssa (Indiana University of Pennsylvania)

[90] *Life on the Conemaugh: Spatial Analysis of Artifact Densities of the Monongahela Tradition at the Johnston Site (36In2) in Southwestern Pennsylvania*

The Johnston site (36In2) is associated with the Johnston Phase of the Monongahela tradition during the Late Prehistoric Period in southwestern Pennsylvania. Located on the Conemaugh River floodplain in Blairsville, Pennsylvania, this large village site was excavated both in the 1950s by the Carnegie Museum and more recently by Indiana University of Pennsylvania, and is one of the largest known Monongahela sites. This project aimed to describe the artifact densities for this site to interpret the different types of activities that were conducted at various parts of site. Initial indicators suggested that differences existed among the three areas of this circular village: the plaza, stockade, and the domestic areas. However, the analysis of spatial distributions at the site is just beginning, I used Surfer9®- Golden Software to generate distribution maps for lithic and faunal materials coupled with graphs to suggest the contrasts in the activities that took place at these three areas of the village. Having personally worked at the Johnston site, it is exciting to see a more complete picture of the site developing that can be useful to further archaeological spatial analyses of this important site.

Hyziak, Alyssa [90] see Napoleon, Taylor

Iannone, Gyles (Trent University)

[262] *The Socio-Ecological Entanglement in Tropical Societies (SETS) Project*

Although comparative studies have been criticized in recent years, especially within the more post-modern corners of anthropology, cross-cultural studies continue to have value for exploring the sometimes congruent, and at other times unique, manner that different communities choose to confront analogous socio-ecological issues. The Socio-Ecological Entanglement in Tropical Societies (SETS) project is a long-term endeavor aimed at promoting the cross-cultural, transdisciplinary examination of the tropical experience, past and present, as a means to explore resilience and vulnerability to changing socio-ecological circumstances. The theoretical and methodological basis of this project will be summarized, and some preliminary insights relating to our on-the-ground research in various parts of south and southeast Asia will be presented.

Idrogo, Henry (Henry A. Idrogo)

[102] *Shared Motifs and Figures in the Archaic of the Cajamarca Highlands: New Data from the site of Callacpuma*

The northern Andes, and in particular the Cajamarca region, has for years seen a dearth of archaeological investigation into the lithic, or archaic period. This is surprising given early investigation in the region by Augusto Cardich whose excavations at caves like Cumbe yielded archaic period occupations dated to 8,500 B.C. More recent work at Conga and Maqui Maqui north of the Cajamarca Basin have documented hunter-gatherer occupations including projectile points dating to approximately 12,000 B.P. Here, I synthesize some of this work and present preliminary impressions related to rock art motifs and figures shared between the sites of Callacpuma in the Cajamarca Basin and the sites of Maqui Maqui and Conga to the north.

Iizuka, Fumie (University of California, Merced) and Diana Carvajal Contreras (Universidad Externado de Colombia)

[14] *Subsistence, Environment, and Ceramic Technological Variability at Puerto Hormiga and Monsú, Early Pottery Sites of the Caribbean Colombia*

Archaic to Formative transitions in the Intermediate Area of Latin America have been discussed in terms of the timing of agriculture, population growth, sedentism and mobility, use of coastal resources, and the appearance of pottery. The Caribbean Colombia has among the earliest dates for pottery in the New World. Sites such as Puerto Chacho and Puerto Hormiga, shell middens near the coast, were occupied by ca. 5,000 B.P. during the wet period. Monsú, a mound in the riverine environment, was in use by ca. 4250 B.P. during the dry period. Faunal-based subsistence practices differed at these sites. Technologically, whereas pottery from Puerto Hormiga has fiber temper and sand inclusions, that of Monsú has shell temper and sand inclusions. Degrees of residential mobility and reliance on cultigens have been debated. In this presentation, we focus on Puerto Hormiga and Monsú that were recently re-excavated, evaluating the inter-site and intra-site diachronic relations of subsistence practice, environment, and ceramic technology. We investigated the variability of their pottery technology and their faunal assemblages, and compared them with results from existing lithic and paleoethnobotanical studies. This research provides new insights on the behavior and change at the early ceramic sites of the Caribbean coast of Colombia.

Ikehara, Hugo (Pontificia Universidad Católica del Perú)

[56] *How Did the End of the Cupisnique-Chavín Religious Complex Affect Local Leadership?*

In this paper, I assess the impact of the end of the Cupisnique-Chavín Religious Complex (CCRC) in local leadership. Using the case of the Nepeña Middle Valley, I evaluate how authority was built during the Late Formative and how the disintegration of the CCRC around 500 B.C. had profound impacts in the way power was constituted and negotiated during the next centuries.

[56] *Chair*

Iliff, Jeremy [64] see Slaughter, Mark

Illingworth, J. S. [69] see Adovasio, J. M.

Imfeld, Sarah [129] see Hirth, Kenneth

Immich, Jennifer (Metropolitan State University of Denver)

[70] *Castles and Colonialism: Exploring Meaning in Historic Irish Archaeology*

Castles, architecture embedded with colonial power, can be understood as communicating display, power, prestige, corruption, oppression in the periods in which they were constructed and used, only to see the meanings shifted, reemphasized, manipulated, and recreated in the modern period. This paper examines the multiple temporal and conceptual values of medieval castles in north County Tipperary, Ireland, as objects of material culture whose meaning has shifted in significance from the period in which they were constructed to the present. With timber castles, change is embedded in the shape of the

object—the fortification of the structure itself (the timber) has disappeared with time, leaving only a mound of earth to represent a castle. Therefore, studying meaning (colonial or other) of timber castles is complicated in the necessity for modern classification of earthen mounds to timber castle type—a task undertaken by the author in her research. As meaning shifts occur in the present, the materiality of timber castles maintain a role as an active agent (colonial or other), continuing to shape activities and identities of those engaging with it. This paper aims to examine the impact of colonialism in the midlands of medieval Ireland, through the lens of timber castles.

Ingalls, Victoria (The University of Texas at San Antonio)

[273] *Social Memory in Maya Hinterland Communities: Recent Excavations at San Lorenzo, Belize*

During the Preclassic Period in the Maya Lowlands, public structures became the materializations of ideology and memory, functioning to add permanence and significance to the growing ritual landscape. Most Preclassic public ritual structures, however, are documented within formal ceremonial centers. Little is known about Preclassic public spaces within hinterland communities. Recent excavations at the Xunantunich hinterland site of San Lorenzo have uncovered a Preclassic round platform buried beneath a Late-to-Terminal Classic settlement cluster. This platform sits on an expansive tamped marl surface and based on preliminary ceramic analysis dates to the Terminal Preclassic Period. Comparative data suggests that this platform may have served a ritual or public function due to its size and form. The reuse and rebuilding on this location during the Late Classic has further implications for the maintenance of meaning and social remembrance of sacred places on the landscape outside formal ceremonial centers.

Ingram, Scott (University of Texas at Arlington)

[168] *Collapse in the North American Southwest: A Comparative Study*

This presentation reports the results of a preliminary cross-cultural comparative study of collapse (depopulation) in the late precontact southwest. Key descriptive characteristics and trends in possible contributing factors to collapse (e.g., population levels, social conflict, natural disasters, environmental impacts, etc.) within eight archaeological cultures will be considered. Generalizable and systematic description rather than explanation is the emphasis. The purpose of this trial study is to investigate the value of the comparative approach for advancing our understanding of collapse in the southwest. Such an approach, fully implemented, may reveal generalizable insights that inform the study of the sustainability and vulnerability of contemporary societies.

[168] *Chair*

Inomata, Takeshi [53] see MacLellan, Jessica

Inomata, Takeshi (University of Arizona)

[178] *The Development of Sedentary Communities in the Maya Lowlands in a Comparative Perspective*

It has long been known in the Andean region that the communal projects of temple constructions and public rituals played an important role in social formation during the preceramic period. Recent archaeological investigations in Mesoamerica are revealing comparable processes. Various ceremonial centers in Mesoamerica appear to have developed before the establishment of maize agriculture and fully sedentary communities. At the lowland Maya center of Ceibal, Guatemala, a formal ceremonial complex was constructed at the onset of the ceramic-use period when a substantial portion of the population still retained some level of mobility. At this center, collective construction activities and communal rituals were central mechanisms that brought together diverse social groups and stimulated social changes.

[109] *Discussant*

Inserra, Fernanda [125] see Pecci, Alessandra

Ireland, Rosie (University of Bristol)

[280] *Discoveries in Hatteras: A Zooarchaeological Study of Native American Consumption Patterns*

The Cape Creek site has been an area of continuous archaeological focus since the inception of the Croatoan Archaeological Project in 2009. This paper will discuss the zooarchaeological methodologies implemented to study Native American use of their immediate landscape and the natural resources of the area during the period before European contact and subsequent consumption adaptations. This will focus on the exploration and analysis of faunal data recovered during the 2012–2015 excavation seasons. Zooarchaeological analysis has cultivated our interpretation by untangling foodway patterns both as part of cultural interaction and symbiosis with the regional ecosystem. This in turn has highlighted patterns of seasonal occupation on Hatteras Island, which together with material culture excavated from the Cape Creek Site has further developed our understanding of Native American behavior and consumption models in this unique landscape.

Iriarte, Eneko [49] see Duarte, Carlos

Iriarte, Jose, Denise Schaan Pahl (Universidade Federal do Para, Brazil), Shira Maezumi (University of Exeter), Salman Khan (University of Exeter) and Daiana Travassos (University of Exeter)

[263] *A Multiproxy Approach to Study Past Human Impact on the Lower Amazon, Santarem*

This presentation summarises the preliminary results of the interdisciplinary research carried out in the context of the 'Precolumbian Amazon-Scale Transformation' project that investigate the nature and scale of past human impact across the Amazon integrating archaeology, archaeobotany, palaeoecology, soil science, botany, and remote sensing. We present initial results from the unique region around Santarém city at the confluence of the Tapajós and the Amazon rivers, home to the Tapajós chiefdom (1000–1600 A.D.) that exhibits some of the highest densities of ADE sites in Amazonia, including Terras Pretas and Terras mulatas, and which are located in diverse settings including both floodplain and terra firme locales. These results are compared with other regions of Amazonia and their implications for the current debate on the nature and scale of past human impact in Amazonia are discussed.

Irish, Joel D. [103] see Lillios, Katina

Isaakidou, Valasia [171] see Bogaard, Amy

Isbell, William [91] see Williams, Patrick Ryan

Isenbarger, Nicole (Archaeological Research Collective, Inc.)

[293] *Colonoware as Cottage Industry: Household Production and the Internal Economy at Dean Hall Plantation, South Carolina*

Research into the slave settlement at Dean Hall Plantation uncovered substantial evidence for the on-site production of Colonoware. Archaeology of household production and the anthropology of households provide us with frameworks for investigating the individual strategies of different homes as they engaged in the internal economy. Each household was a productive unit and their ability to produce their own wares affected their needs, access, and exchange within local markets. Identifying the different economic strategies employed in these enslaved African households allows me to ask questions concerning how the family units spent their profits. Unlike typical Colonoware studies that focus on core West African elements of the pottery itself (i.e., religion, medicine, African foodways), I focus on how it was made, who was involved, and how Colonoware fits in with the site's entire material assemblage; Colonoware is not studied in isolation. A better incorporation of Colonowares within household assemblages highlights similarities and differences between households at Dean Hall providing a richer interpretation of how the enslaved worked to both support themselves and maintain a strong community.

Isendahl, Christian (University of Gothenburg) and Elizabeth Graham (University College London)

[262] *A Model for Urbanism from the Neotropics?*

Drawing from our own research on food, water, and waste management, we describe the development and characteristics of settled life in the humid neotropics with a view to isolating features or patterns that reflect sustainable trajectories. Because mainstream concepts of "the city" tend to be structured by urban experiences that lie outside the tropics and are recentist in outlook, we suggest that there are urban (and peri-urban) phenomena in the deep past of the neotropics that tend to be ignored as criteria for urbanism, such as the nature of greenspace, or the way "density" is conceptualized and measured. Bringing archaeological data on neotropical cities to light broaden the comparative frame of reference on the constitution of cities as a global phenomenon.

Isendahl, Christian [263] see Söderström, Mats

Isnardis, Andrei [139] see Bueno, Lucas

Isnardis, Andrei (Federal University of Minas Gerais, Brazil)

[167] *Interaction through Time: Diachronical Composition of Rockart Panels in Central Brazil*

The central Brazil has a large number of rock art sites, with remarkable stylistic variability. Trying to understand such variability, the Brazilian archaeologists proposed chrono-stylistic units to analyse the stylistic changes in different regions. In some specific areas, the studies of stylistic changes led us to perceive another dimension of that variability: the diachronical interactions. This presentation tries to highlight specific behavior of new paintings, when they reoccupy rock walls that are already occupied by earlier paintings, in two areas where Federal University of Minas Gerais has been conducted archaeological research, in Minas Gerais, Brazil.

Iverson, Shannon (University of Texas)

[130] *Breaching Spiritual Borders: How Indigenous Religious Ontologies Colonized Christianity*

In 1524, only three years after the military conquest of central Mexico was complete, 12 Franciscan friars arrived in New Spain to begin an ambitious religious conversion program. The friars arrived in a territory where landscapes, buildings, and everyday objects (such as foodstuffs and ceramic objects) were already "mythologized"—deeply imbued with supernatural connotations. For the Spanish priests, Indigenous worlds were always potential minefields of spiritual pollution. Therefore, though they often worked very closely with and advocated on behalf of Indigenous peoples, they also attempted to maintain a boundary between their traditions and those of the "pagans." Using Tula, Hidalgo as a case study, I investigate those attempts at boundary maintenance by comparing material culture from two very early colonial sites, a Franciscan chapel constructed in 1530 and a cathedral built in 1550. This study revealed two important points: first, creativity and innovation happened within material culture of the Indigenous tradition, rather than through imitation or importation of European goods. Second, the comparative contexts showed that Spanish friars were forced to adapt to an overwhelming tide of Indigenous religious traditions, which would permanently impact the shape of Mexican Catholicism.

Ives, John [190] see Lints, Andrew

Izuho, Masami [21] see Gillam, Christopher

Jackson, Kendal (University of South Florida) and Thomas Pluckhahn (University of South Florida)

[55] *Preliminary Results from Pollen Analysis of Soil Cores at Crystal River (8C11), Florida*

Environmental changes have been frequently cited as causal factors in the growth and collapse of complex societies in the American south. Gulf Coast archaeologists, in particular, have turned to generalized global paleoclimate curves in attempts to understand how ancient coastal villagers responded to environmental shifts. Archaeological palynology, a notably under-utilized resource in the region, offers fine-grained resolution and the ability to investigate local, as well as regional landscape transformations. We report preliminary results of palynological analysis on soil core samples taken from mound, midden, and marsh contexts at Crystal River (8C11), a Woodland period (ca. 1000 B.C. to A.D. 1000) ceremonial and population center on Florida's west central-coast. Previously reported carbon dating of mound and midden strata, along with new dates from nearby marsh deposits, provides tight chronological control for reconstructing socioecological responses to major changes in climate and sea level. Our study aims to exhibit the untapped potential of stratigraphic microbotanical analysis for improving the understanding of social and ecological dynamics of fisher-hunter-gatherer societies.

Jackson, Alexis (Brown University)

[119] *Building Charlieu: Chronology and Asset Flow over Time at Saint Fortunatus Monastery, 872–1120 C.E.*

The monastery of Saint Fortunatus in Charlieu, France, was built and rebuilt several times from the ninth to the twelfth centuries. In the twentieth century, the monastery was excavated by American archaeologist and art historian Elizabeth Sunderland, who relied heavily on its relationship to mega-monastery Cluny to reconstruct the smaller abbey's chronology. However, re-examining Charlieu's timing and phasing with attention to material and labor costs over time exposes an alternative chronology for the site. Close attention to energy costs suggests that certain construction campaigns overlapped in time and exposed opportunities for the medieval builders to use cost-saving measures (such as stockpiling, reuse, and limited demolition). Additionally, the use of architectural energetics as a research method for Charlieu allows one to examine the abbey's chronology separately from the Abbey of Cluny, whose history and historiography exert a strong force on the smaller monastery.

Jackson, Brittany [178] see Lesure, Richard

Jackson, Brittany (Department of Anthropology, UCLA), Jacob Bongers (Cotsen Institute of Archaeology, UCLA), Susanna Seidensticker (Department of Anthropology, UCLA) and Terrah Jones (Cotsen Institute of Archaeology, UCLA)

[206] *Picking up the Pieces: Bioarchaeological Analysis of a Looted Cist Tomb in the Mid-Chincha Valley, Peru*

This poster presents a bioarchaeological analysis of a cist tomb in the mid-Chincha Valley, Peru dating to the Late Intermediate Period (c. A.D. 1100–1450). Though the tomb was partially looted prior to excavation, we successfully reconstructed associations between elements from multiple individuals to gain important data regarding health status and the life course during this dynamic period in late prehistory. The analysis revealed the presence of at least 7 individuals buried in the single cist tomb. These include one adult male, one adult female placed above the male, and at least 5 sub-adults scattered throughout the tomb. Through a macroscopic analysis of health status and other indicators for all the individuals in the tomb, we outline the most probable relationship among individuals as well as information about the life histories and health status of individuals in this population. In doing so, we demonstrate the depth of data available through careful collection and reconstruction of looted contexts. Additionally, we provide important insights relevant to the study of mortuary practice during the LIP in the Chincha Valley.

Jackson, Sarah E. [27] see Wright, Joshua

Jacob, Robert W. [148] see Chisholm, Linda

Jacobs, Jordan

[30] *Patriation: NAGPRA's Regulations on Culturally Unidentifiable Human Remains, Applied*

In 2010, the promulgation of new regulations under 1990s Native American Graves Protection and Repatriation Act (NAGPRA) threatened to upset the hard-won balance that had developed between the legitimate interests of descendant communities and the scientific and museum communities over the previous 20 years. Because the 10.11 rule broadly mandates the disposition of culturally unidentifiable human remains, many parties—including the Society for American Archaeology—reacted negatively, stating that the proposed and final versions of the regulations were unworkable and subverted NAGPRA's original intent. This paper will use real-world examples to explore the degree to which those initial concerns have been realized in the 10.11 rule's five first years. It will discuss how ambiguities in the regulation's text, differing interpretations, inconsistencies in messaging by the National NAGPRA Program, and the contradictory objectives of the Act and regulations have affected NAGPRA implementation as a whole.

Jaffe, Yitzchak [106] see Flad, Rowan

Jaffe, Yitzchak (Harvard University)

[106] *Culture and Its Variations—A Community Focused Study of Siwa and Western Zhou Cemeteries in Gansu*

For his last SAA paper, Professor Chen Pochan talked about the Dian Yangfutou cemetery in Yunnan. He presented the results of an analysis that provided new meaning on its social structure. The Dian culture was an important entity on the periphery of the Warring States and early Han world, but apart from several references in Chinese historical documents little is known, but much is assumed, about them. Chen's study complemented previous Dian mortuary research with site-specific practices in order to present the unique social structure of the Yangfutou community.

Like the Dian, the Siwa were a peripheral culture who were contemporaries of the Shang and Zhou polities. As the Siwa are often identified with the lesser barbarian tribes mentioned in historical texts, their sites and artifacts are lumped together as a single cultural complex and contacts between them and the Chinese core are assumed to be violent. In this paper, I present the variability of Siwa cemeteries and the results of analyses performed on two proximal graveyards, one believed to be Siwa and the other Zhou. My research finds great variability among Siwa community specific burial customs and uneven relationships with their Zhou neighbors.

James, Patrick [211] see Burke, Ariane

James, Vivian (University at Albany)

[247] *Archaeological Epistemology and Praxis: Multidimensional Context*

This paper builds on ideas expressed by Taylor (1948) and Schiffer (1988) to argue that there is a foundational theory in archaeology that is pervasive, definitive, and underlies all archaeological epistemology and praxis. It is so basic an idea that it is thought of as an assumption rather than a theory, yet it is a major contribution from archaeology to scientific knowledge and practice. This theory is "context," which goes far beyond the three dimensions of object-space-time advocated by Willey and Phillips (1953) or the four dimensions of provenience and association as defined by Lyman (2012). This paper explores the multidimensionality of context as theory to recognize the unique and relevant contributions of archaeological epistemology and praxis to science.

James, Steven (California State University at Fullerton)

[258] *Dr. Fay-Cooper Cole and His Father, Rev. Dr. George L. Cole: A Forgotten Chapter of Early Archaeological Explorations in the American Southwest*

In the history of American archaeology, Fay-Cooper Cole (1881–1961) at the University of Chicago was instrumental in implementing standardized archaeological field methods and training a generation of archaeologists through his Illinois field schools in the 1930s and 1940s. In recent years, there has been some debate about the origins of the "Chicago Method" of excavation, for it has been stated that "Cole had no previous training in archaeology" (Browman 2002). Yet before he began his significant anthropological career, Cole accompanied his father on archaeological expeditions to the American southwest at the turn of the twentieth century and published early photos of archaeological ruins. The exploits of Rev. Cole and his son were described in major newspapers across the country at the time, and Rev. Cole gave public lectures in southern California about the archaeological finds. Their excavations in northern New Mexico at the site of Puyé brought them into conflict in the early 1900s with Edgar Lee Hewett and Charles Lummis who were promoting archaeological tourism in New Mexico and the founding of the Southwest Museum in Los Angeles. The linkage between Fay-Cooper Cole and his father's southwestern expeditions has not been known until now, as discussed in this presentation.

Jamieson, Bruce [144] see Engelbrecht, William

Jamison, Thomas R. [125] see LeCount, Lisa

Jamsranjav, Bayarsaikhan [180] see Morgan, Christopher

Jankauskas, Rimantas [134] see Dupras, Tosha

Jansen, William

[10] *Chiefs' Regalia and Recognition: An Unusual Example of Heritage Values and Political Agendas in Zimbabwe*

Various regalia and practices for recognizing traditional chiefs were used to support political agendas for maintaining colonial rule in Zimbabwe (formerly Rhodesia and, earlier, Southern Rhodesia) for over 120 years, becoming part of the country's cultural heritage. After independence (1980), different political agendas of the new regime resulted in many of these practices no longer being utilized or emphasized. By 1999, with political opposition growing, the long-ruling regime adopted new political agendas to retain power. One result was the re-invigoration of old colonial practices for recognizing traditional leaders and the use of these aspects of the country's heritage as current tools to maintain a regime.

Janusek, John [25] see Blom, Deborah

Janusek, John (Vanderbilt University)

[178] *Formative Urbanism in the Andean Lake Titicaca Basin*

Archaeologists tend to apply the term 'formative' to phases of emergent complexity in a given world region. I critically engage the concept by honing in on what I term incipient urbanism as a core dimension of formative complexity. I draw on comparative data from across the Americas to situate formative complexity and incipient urbanism in the Andean Lake Titicaca Basin. Archaeologists working in the region have known for years that by at least 800 B.C., the region was home to multiple influential, in some cases competing ritual-political centers. We tend to agree that Tiwanaku emerged as the region's first city later than A.D. 500, with ensuing generations of intensifying urbanism and political centralization referred to as the 'Middle Horizon.' I explore the urban dynamics of the 'pre-city' Titicaca formative. I focus on a few cases to argue that fields of highly mobile communities identified with multiple incipient centers at any given time, and that the ritual practices and political gatherings they periodically housed were the generative focus of emerging, dynamic urban processes that ultimately produced Tiwanaku.

Jaquez, Celso

[44] *Chalcatzingo Monument 5: A Middle Formative Mesoamerican Expression of the Celestial Paradise*

In 2004, Dr. Karl Taube outlined the ancient Mesoamerican concept of a celestial floral paradise where souls were transported after death. This presentation will focus on what I believe to be the earliest representation of sacred transport of souls to the celestial realm. Serpent representation, often depicted with floral adornments or exhaling flower blossoms, were often depicted as either vehicles for the transport of souls to the afterlife, or as was the case of the cosmological murals at the late Preclassic site of San Bartolo, as the ground line for events related to creation. The origins of the Flower World complex, however, are rooted much deeper in Mesoamerican history. Floral motifs intended to reflect the afterlife can be traced to the Olmec as early as 700 B.C.E. It is during this period of time that a monument at the site of Chalcatzingo was carved, intending to depict what would be the earliest representation of the concept of sky serpent transport of the soul to the celestial paradise. Evidence will be presented that will reassess the interpretation of Monument 5 at the Middle Formative Olmec site of Chalcatzingo reinterpreting and reframing it within the Flower World religious complex.

Jarriel, Katherine (Cornell University)

[257] *Modeling Small World Networks in the Cyclades (Greece)*

This paper explores how community interaction can be modeled on a local scale using the Early Bronze Age Cyclades (Greece) as a case study. Small worlds—the local, intensive networks of interaction among communities in the Aegean islands—sustained essential ties among small communities that had limited subsistence and few labor resources (Tartaron 2008: 109). By combining material evidence for exchange and ritual deposition, environmental data, and cost-surface analyses of travel time and distance into GIS, this paper defines one small world in the central Cyclades and seeks to explain the reasons behind its development and cohesion. As opposed to most network analyses which describe centralization, a small world's model of community interaction recognizes that often the most marginal areas of human habitation require the most intense and long-lived community ties to ensure their survival (Horden and Purcell 2000). Understanding which communities may have been incorporated into these small worlds and the degree of connectivity between them leads to better archaeological understanding of issues surrounding inter-community interdependence (e.g., agricultural subsistence, surplus production), social interaction (e.g., extended family ties, exogamy, rituals, and social gatherings), and material exchange.

- [33] *Discussant*
 [257] *Chair*

Jarvis, Jonathan [265] see Tomka, Marybeth

Jastremski, Nicole (Florida Atlantic University) and Valentina L. Martinez (Florida Atlantic University)

[204] *Bioarchaeology in Coastal Ecuador*

Bioarchaeology is slowly being integrated into research programs in Ecuador. Ubelaker's 1981 groundbreaking excavation and analysis of the Ayalán Cemetery, along the southern coast, was the first attempt at incorporating bioarchaeology in this region; however, since then, relatively little work has been done. We seek to investigate human skeletal remains found at different archaeological sites in the Manabí province. The sample comprises diverse burial type, age, and contextual information. Some remains were previously excavated by professionals in the 1980s, others have been recently excavated by our team, and some are the result of community efforts to salvage archaeological materials from modern constructions. Our project is two-fold: 1) to understand the paleodemography and burial practices as they relate to social belief systems; and 2) to continue to strengthen a decades old program of cooperation and education with local communities. In this poster, we present some preliminary bioarchaeological findings and our work with descendant peoples in coastal Ecuador.

Jazwa, Christopher [55] see Braje, Todd

Jazwa, Christopher (Pennsylvania State University), Michael Price (Pennsylvania State University) and Douglas Bird (Pennsylvania State University)

[182] *Archaeological Implications for an Agent-Based Model of Subsistence Intensification in the Western Desert of Australia*

Agent-based models are useful tools for modeling decision making and its system level effects when the system being modeled is too complex to be accurately described by a simple mathematical model. This is important archaeologically because site distributions and material assemblages represent the aggregate results of many individual subsistence decisions that take place in a complex ecological and social landscape. In this poster, we present an agent-based model for subsistence intensification and landscape modification in the western desert of Australia. This model includes variables common in human behavioral ecology regarding foraging decisions, including processing time, return rate, and probability of capture, as well as cultural variables such as kinship patterns and property ownership. We demonstrate the predictive capacity of this model for interpreting the archaeological record using data for site distribution and faunal assemblages. Of particular importance is the role of strategic landscape modification to support immediate foraging goals, particularly with respect to anthropogenic fires. This is supported by ethnographic observations of Martu hunting and foraging patterns. The agent-based model discussed here has broad implications for interpreting individual and group decision-making from the archaeological record.

Jazwa, Kyle (Florida State University)

[257] *Constructing Collapse: A Technological Analysis of Early-Middle Bronze Age Domestic Architecture in Mainland Greece and its Social Implications*

In this paper, I present a technological analysis of stone-built, domestic architecture from the transition of the Early Bronze Age to Middle Bronze Age (ca. 2200–1800 B.C.E.) in mainland Greece. Specifically, I analyze the degree of correspondence of 180 unique aspects of architectural construction and spatial organization between contemporary structures. Because domestic architecture was most likely built by the local inhabitants and used for their daily activities, the network of correspondence can help to suggest patterns of interaction and integration based on daily practice and the chaîne opératoire of construction.

This case study helps to determine more precisely the social networks of interaction during a period of great collapse in social complexity in mainland Greece. At this time, many settlement sites are destroyed or abandoned and a new building form, apsidal structures, coexists with the earlier, rectilinear architecture. Although the precise source of this change and destruction is still under debate, my analysis reveals that the disparity between the two structure types is more than superficial; there are essential differences in the construction techniques related to each building form. This suggests the presence of two or more social groups cohabiting many sites during this crisis.

Jenkins, Dennis [113] see McDonough, Katelyn

Jenkins, Jessica (University of Florida)

[133] *Oyster Mariculture on Florida's Northern Gulf Coast: The Intensification of a Ritual Economy*

Subsistence intensification among small-scale societies results from myriad circumstances, some of which involve demands that go beyond the scale of household production and consumption. The creation and use of ritual facilities, for instance, often entail large gatherings of persons that require provisioning. On the northern Gulf Coast of Florida, civic-ceremonial centers with elaborate mortuary facilities were established at about A.D. 200. A well-established subsistence economy of fish, turtle, deer, and shellfish—notably oyster—may have been stressed by both the greater demand of larger residential populations, as well as changes in sea level documented at this time. Oyster shells from one such center, Shell Mound (8LV42), register changes in the location and intensity of harvesting over a two-century period. Comparable to clam gardening of the northwest coast, Shell Mound residents appear to have manipulated oyster beds to enhance the production and sustainability of oysters. Evidence for oyster mariculture at Shell Mound is evaluated in light of a ritual economy that gathered participants from the greater region and thus intensified demand for not only communal provisioning but also the raw material (oyster shell) for constructing ritual facilities.

Jenkins, Dennis (Museum of Nat. & Cult. Hist., University of Oregon) and Joshua Ziegler (Department of Anthropology, University of Oregon)

[274] *Reevaluation of Site Chronology, Subsistence, and Unifacial Lithic Technology at the Connley Caves (35LK50), Lake County, Oregon*

The Connley Caves are a series of rockshelters and caves eroded into a south-facing ridge of Miocene welded tuff, rhyolite, and fine-grained basalt in the Fort Rock Basin of Oregon. Initially excavated by Stephen Bedwell in 1967–68, their deeply stratified late Pleistocene-early Holocene deposits produced rich lithic and faunal assemblages potentially associated with earliest radiocarbon ages of 10,600±190 and 11,200±200. The Connley Caves data played a major role in the development of Bedwell's proposed 'Western Pluvial Lakes Tradition,' a concept emphasizing the central place of lacustrine settings to

early Holocene occupants of the Great Basin which has been replaced by the 'Western Stemmed Tradition' (WST). The University of Oregon field school revisited the site in 2000, 2001, 2014, and 2015. These excavations recovered extensive unifacial WST lithic assemblages associated with Haskett style projectile points and tiny bone needles. Protein residue analysis (Cross-over Immuno-Electrophoresis) of a substantial number of scrapers and edge modified flakes investigates potential differential use of these tools. Distributional analysis indicates concentrations of artifacts along the east side of the cave and deposits dipping to the west. Charcoal from primary deposits to bottom of the profile has been radiocarbon dated, providing chronologic control for these studies.

Jennings, Richard [22] see Scerri, Eleanor

Jennings, Justin (Royal Ontario Museum)

[105] *Moving Places: The Creation of Quilcapampa*

During the Middle Horizon (A.D. 650–1050), the site of Quilcapampa la Antigua in the Sihuas Valley of southern Peru grew from a small village into a major political center. This chapter considers how the growth of Quilcapampa was linked in part to the experiences of people passing through this location. Drawing on Alfred Gell's idea of "technologies of enchantment," we examine how the site's associated geoglyphs, petroglyphs, and pathways marked and gave meaning to a place already ritually charged because of its unique geologic properties. Movement through the site—whether by travelers, traders, or religious supplicants—was reshaped by these technologies, the paths and glyphs serving as aggregative material citations that elevated the site's importance by relating the circulation of people to the circulation of cosmic forces. Quilcapampa's political power was based at least in part on its inhabitant's ability to connect the coastal and highland economies. The ritual landscape created in and around the site celebrated this vertical integration, adding a sacred justification that would help sustain Quilcapampa's preeminent position in the valley for the next 300 years.

[186] *Discussant*

[105] *Chair*

Jennings, Thomas (University of West Georgia), Ashley Smallwood (University of West Georgia) and Charlotte Pevny (R. Christopher Goodwin & Associates, Inc.)

[218] *Paleoenvironments and Paleoindians in the Lower Mississippi River Valley*

Throughout much of the last Ice Age, the Mississippi River, along with its tributaries, served as a key outflow conduit for glacial meltwater, funneling and depositing vast amounts of sediments south towards and into the Gulf of Mexico. During and after the Younger Dryas, this geomorphic system underwent significant changes caused by meltwater drainage fluctuations and sea level oscillations. In this paper, we review how paleoenvironmental changes associated with the Younger Dryas affected the Lower Mississippi River Valley. We then review the regional Paleoindian record, from Clovis/Gailey through the Dalton fluorescence, and discuss whether significant changes in human technological organization or settlement coincide with specific environmental shifts.

Jensen, Anne (Bryn Mawr College)

[210] *Report from the Ragged Edge: Vanishing Heritage on Alaska's North Slope*

The North Slope of Alaska is home to many coastal sites with spectacular preservation, due to frozen conditions. Long considered relatively stable, these sites are now vanishing. Erosion rates have increased exponentially, due to warming permafrost, sea ice retreat and longer ice-free seasons. Coastal erosion reveals structures and features, but they are often destroyed by storms before anything significant can be done. A single recent storm removed over 30 meters of one site.

North Slope archaeological work is extraordinarily expensive, due to remote locations and the huge volumes of organic materials recovered. Many of the sites are on private land, so no agency has responsibility for the heritage resources. Current funding mechanisms do not suit such situations, as the process is such that funds cannot be available during the next field season, even if a successful proposal is prepared on very short notice.

North Slope residents are very concerned at the loss of their cultural heritage. The municipal government agency that has heritage responsibilities cannot handle the issue alone. A variety of avenues for community participation are being developed to provide opportunities for members of the public to assist in protecting their heritage.

[210] *Chair*

Jeremiah, Kristen (Public Archaeology Laboratory, Inc. (PAL)) and Dianna Doucette (Public Archaeology Laboratory, Inc. (PAL))

[42] *Procuring and Processing Resources Down by the Brook: Archaeological Investigations at The Susquetonscut Brook Site 11 in Eastern Connecticut*

In July of 2015, The Public Archaeology Laboratory (PAL) completed data recovery investigations at the Susquetonscut Brook Site 11 (SB 11), in Lebanon, Connecticut. Investigations resulted in the recovery of over 7,000 artifacts, including diagnostic projectile points, a variety of stone tools and debitage, calcine bone, and Native pottery sherds. Cultural features exposed during investigations include post molds, pit features, fire hearths, and a roasting platform. The overall lithic tool assemblage, fire-related cultural features, and presence of calcine bone, suggest that SB 11 was intensively utilized for resource procurement and processing, as well as for tool manufacturing and maintenance. The data recovery investigations revealed that the site was occupied during the Middle and Late Archaic periods, and again (although briefly) in the Woodland Period. Overall, SB 11 significantly contributes to the precontact archaeological record of eastern Connecticut as a whole, and specifically of the Yantic River drainage. This poster will present the results of archaeological investigations of SB 11, addressing the range of activities represented at the site, precontact land use patterns of the Yantic River drainage in eastern Connecticut, seasonality of occupation and site use, and how activities varied from the Archaic to Woodland periods.

Jerrems, William

[155] *The Rise and Fall of the Great Basin Pleistocene Lakes and the Possible Influence on Early Paleoindian Inhabitants*

Few topics have been more profound than the subject of climate change at the end of the Pleistocene and early Holocene in the Great Basin of North America and the influence that such change may have had on the earliest human inhabitants. Rapidly shifting climate is exemplified by the filling and waning of internally drained pluvial lake basins. Two very large lakes intermittently occupied a huge part of the northern Great Basin throughout the Pleistocene. Lake Lahontan and Lake Bonneville covered 79,000 km² along with many smaller basins stretching from southeastern California to central Oregon and east to the Rockies. Archaeological evidence is suggesting an early Paleoindian entry into the Great Basin to take advantage of what may have been a paleoecological refugium for wildlife in a mild and moister climatic regime.

[5] *Discussant*

Jeske, Robert [232] see Sterner-Miller, Katherine

Jessamy, Michael [183] see Hanna, Jonathan

Jew, Nicholas [55] see Braje, Todd

Jiang, Leping [173] see Kwan, Daniel

Jimenez, Jose Concepcion [20] see Casar, Isabel

Jiménez, Gerardo [44] see Murtha, Timothy

Jodry, Margaret

[159] *Learning From Ancestors: A New Interpretation of an 11,100-year-old San Patrice Double Burial From Horn Shelter No. 2, Central Texas, U.S.A.*

Belongings placed with a 40-year-old man and an 11-year-old girl suggest that the adult may have been a healer. A bundle placed beneath his head includes turtle shell bowls, antler pestles, red ochre, a deer bone stylus, sandstone abraders, and an Edward's chert biface. Perforated shell beads, coyote teeth including a scarifier, non-perforated badger claws, and Swainson's hawk talons, and other items accompanied this Elder. His participation in body painting, scarification, and incision is considered, as are well-developed features of his forearms that may suggest that he was a drummer. This Elder appears to be the earliest healer currently recognized in the archaeological record of Turtle Island. An eyed bone needle was found with the girl, about whom less is currently known.

[62] *Discussant*

Johannesson, Erik

[60] *The Way the Wind Blows on the Steppe: The Historical Ecology of Mortuary Monuments in Mongolia (1500 B.C.–1400 A.D.)*

Subject to continuous change, landscapes represent palimpsests of successive alterations over time. As such, landscapes have history. Following Carole Crumley's major contributions to historical ecology, this paper charts diachronic change in mortuary landscapes in Mongolia against the backdrop of three major nomadic polities: the Xiongnu (200 B.C.–200 A.D.), The Turk Empire (550–850 A.D.), and the Mongol Empire (1200–1400 A.D.). The construction of impressive funerary stone monuments has been a consistent feature of Mongolian prehistory since the middle of the second millennium B.C. Steppe politics frequently involved manipulating these monuments and associated mortuary practices, making funerary contexts some of the most visible components of nomadic polities' political economy. Here, I will discuss how the political economies of the empires mentioned above used funerary monuments respectively to subvert, integrate, or appropriate preceding architectural narratives and symbols present in the landscape. In doing so, they each contributed distinctive elements to an evolving and dynamic landscape of stone monuments that now form an integral part of Mongolian cultural heritage.

Johansson, Lindsay (University of Colorado, Boulder)

[104] *Caught Between Two Regions: A Historical Perspective on How Archaeologists Understand the Fremont Regional System*

Like every archaeological region, current views concerning Fremont are influenced as much by the history of archaeologists as it is by the archaeology itself. This paper presents a (very brief) history of Fremont archaeology and archaeological thought, focusing on how particular developments and individuals influenced how Fremont was understood. Our aim is not to be comprehensive, and we will undoubtedly omit important events and information, including contributions of many in attendance. Our goal instead is to contextualize the symposium and illustrate the influential nature of the present work in general archaeological conceptualizations of Fremont.

[104] *Chair*

Johansson, Lindsay [104] see Stauffer, Sara

John Jr., Edwell [266] see Hollinger, Eric

Johns, Mischa (City of St. Augustine) and Carl Halbirt (City of St. Augustine)

[213] *Well, Well, Well: A Look into the Varieties and Distribution of Wells in Colonial St. Augustine, FL*

Since the City of St. Augustine's Archaeological Preservation Ordinance was enacted in 1986, more than 200 wells have been excavated. This presentation takes a look at some of the styles and circumstances of their construction and examines the the distribution of these various styles across the city's archaeological zones during the city's centuries of development. Through the varieties of well construction used over the centuries we hope to glean insight into the path that the city has taken as it has grown.

Johnson, Peri (University of Illinois at Chicago) and Müge Durusu Tanrıöver (Brown University)

[79] *Hittite and Achaemenid Imperialisms in West Central Turkey*

The Yalburt Yaylası Project studies a series of depressions bounded by scarps forming a corridor frequented by merchants and armies traveling between the Anatolian plateau and western Aegean valleys of Turkey. With a settlement structure dominated by fortresses controlling access along this corridor, the landscape could be interpreted as an imperial possession, but then archaeology would become an apology for imperial power. To contrast, we focus on how imperialism is built from the ground up through agricultural practices and consumption. First, we present our study of ceramics of settlements that were imperial foundations located on the corridor—Bozhöyük (Bronze Age, Hittite) and Codurun Höyük (Iron Age, Achaemenid)—to study practices of consumption and how inhabitants participated in, or rejected, imperial cultural practices. Changes that happen between the Hittite and Achaemenid periods are further examined to reveal how practices reflect local preferences and production techniques. Bozhöyük, for instance, reveals hybrid strategies in consumption vessels, demonstrating the unique character this settlement crafted between regional and imperial centers. Second, we turn our attention to a northern branch of the depressions, the Kurugöl, to discuss how places are continually rooted again in their landscapes as each new empire appears on the horizon.

Johnson, Amber [94] see Zeanah, David

Johnson, Amber (Truman State University)

[94] *Chair*

Johnson, Rachel (University of Pittsburgh), Patrick Mullins (University of Pittsburgh) and Brian Billman (University of North Carolina, Chapel Hill)

[207] *Households and Empire: A pXRF Study of Metal Artifacts from Cerro la Virgen*

The Chimú Empire controlled much of the Peruvian north coast during the Late Intermediate Period (1000–1476 A.D.), including the hinterland site of Cerro la Virgen (CLV). Previous research suggests that CLV could be viewed as a facet of the Chimú plan for the organization of rural areas, a plan that included controlled access to water, the restriction of rural settlement, and agricultural management through rural administrative centers. This model for local rule ultimately suggests that resources in this empire were under tight control, a control that would likely extend to items of considerable exchange value, such as metals. This project aims to examine the composition of metal artifacts from CLV to investigate how these social factors may have influenced Chimú metallurgy. Artifacts excavated from CLV were separated into several categories, by both type and overarching function (ornamental, utilitarian, etc.). The artifacts were then compared based on compositional analysis performed via portable x-ray fluorescence (pXRF). Trends in the composition of these differing artifact types suggest the manner in which certain metal objects were smelted or procured. Ultimately, these compositional trends may be able to improve our understanding of Chimú metallurgy, thereby illuminating some of the larger elements of Chimú socio-economic structure.

Johnson, Erlend (Tulane)

[212] *The Making of a Hinterland: Evaluating Classic Period Copan's Political Organization and Territorial Limits with Data from the Cucuyagua and Sensenti Valleys*

The ability of Maya Ajaws to project political power outside of their capitals is a widely debated topic: some investigators sustain centralized territorial models for Maya political organization, and others defend segmentary models. The location of Copan on the southern fringe of the Maya world gives a unique opportunity to study this phenomenon because political boundaries in this multicultural environment are more visible than in other Maya kingdoms. We will explore the tempo and degree of political changes in the Cucuyagua and Sensenti valleys southeast of Copán. We will present arguments that suggest that the expansion of Copán during the Classic Period transformed the two valleys: integrating the first valley into the Copán polity and transforming the political geography of the second valley. This suggests that the rulers of Copan had the ability to instigate major, structural changes outside of their seats of power and that a centralized model of political organization may be more apt for Copán.

Johnson, Nadia (Penn State)

[237] *Wild Resource use in Early Colonial New Spain*

In 1570, 50 years after the conquest of Mexico, King Philip II of Spain sent one of his court physicians, Francisco Hernández de Toledo, to the new colony. The goal of this venture was to compile a detailed account of the natural history of New Spain, emphasizing indigenous medicine and the uses of local plant, animal, and mineral resources. The result of his efforts was a series of volumes, describing in detail the virtues of local Mexican resources, and his own observations of Mexico. This work was subsequently distilled into the *Quatro libros de la naturaleza y virtudes de las plantas y animales*, which remains one of the most comprehensive studies of indigenous natural resource use, and which will provide the basis for this project. This study will collate and quantify each of Hernández' references to the use of natural resources, and to then classify them in three broad categories on the basis of use: food, medicine, and craft production. These will be further divided, where relevant, to consider additional variables, such as the availability, status, etc. for specific resources. The resulting information will be presented in concert with observations regarding wild resource use made by other sixteenth-century chroniclers.

Johnston, Cheryl (Western Carolina University), Paul Martin (University of Memphis), John Schweikart (ASC Group, Inc.), Lucas Rolleri (Southern Illinois University) and Jane Brown (Western Carolina University)

[37] *Forensic Archaeological Field Training: Pedagogy and Practice*

In the discipline of archaeology, the field school experience is considered the fundamental training that all archaeologists will experience along their educational pathway. These trainings are designed to teach the basic methods and critical thinking skills that are needed to conduct archaeological investigations. Within the realm of forensic anthropology and forensic archaeology an additional set of field school experiences have been developed to address the recovery of human remains and associated items in a forensic setting. As searches for human remains require a multi-disciplinary approach so should the field school education of future forensic anthropologists and forensic archaeologists. We propose a model for forensic archaeology field training, suggest best practices, and discuss pedagogical considerations and a multidisciplinary approach to forensic archaeological field training.

Johnston, Philip

[41] *Fragments of Identity: Systematic Ceramic Analysis, Technology, and Colonial Process*

This poster reports the results of a systematic examination of composition for 188 ceramic samples from the Bay of Cádiz (Spain), and discusses the socio-economic ramifications of the findings. Petrographic, NAA, and portable X-Ray Fluorescence (pXRF) analysis focused on 166 Phoenician and Iberian sherds dating to c. 800–550 B.C.E. An additional 12 geological and ceramic samples were included as controls for the provenance determination.

The findings reveal unexpected relationships between chemical and microscopic traits in ceramics from the Bay of Cádiz, underscoring the importance of both archaeometric approaches to pottery composition. Because samples were selected from several successive occupational phases, and from vessels of both Phoenician and Indigenous style, the compositional data provide a window into the development of pottery production in the colonial context. The poster highlights a few of these, namely, traditionally Phoenician vs. indigenous practices of raw material acquisition; the effects of the colonial context on knowledge transmission between generations of potters; and the appearance of mixed Phoenician-Iberian technological style.

Jolie, Edward (Mercyhurst University), Verónica Lema (Universidad Nacional de La Plata-CONICET) and Sara López Campeny (Universidad Nacional de Tucumán-CONICET)

[62] *Terminal Pleistocene/Early Holocene Perishable Technologies and the Peopling of the Andes*

Accumulating evidence from Terminal Pleistocene and Early Holocene sites in the Americas attests to the antiquity and sophistication of perishable technologies such as cordage, netting, basketry, and textiles. Although the record of perishable industries is limited principally by factors of preservation, reevaluation of the available data for plant fiber-based technologies, and direct radiocarbon dates, continue to provide insights into the importance of these earliest perishable artifacts and their implications for the peopling of the Americas. This paper reviews the existing database relevant to understanding the earliest perishable artifacts from South America with particular reference to their role in the colonization of high altitude landscapes. Comparison with data from broadly contemporaneous sites at lower elevations provides important spatiotemporal context.

Jolie, Edward [63] see Weeks, William

Jones, Katherine (University of Georgia)

[7] *Geospatial Analysis of Ogeechee River Valley Settlement Patterns*

The Ogeechee River Valley lies between the Oconee and Savannah River valleys in central Georgia. It is a slow moving blackwater river, unlike the faster-flowing Oconee and Savannah Rivers. More than 7,000 sites have been recorded in the Ogeechee Basin, compared to 20,200 sites within the Savannah drainage and 9,800 sites within the Oconee drainage. Using existing site data ranging from the Paleoindian through Historic periods, I test whether the number of sites recorded for each basin is indicative of past settlement behaviors or disparities in survey coverage. This analysis systematically evaluates how currently known settlement patterns relate to physiographic and geomorphic conditions within the Ogeechee Basin. I compare results with analogous data from the Savannah and Oconee basins, and show that Ogeechee Basin occupational history may not mirror either adjacent basin. I argue that long-term settlement pattern changes on the Ogeechee deviate from the Savannah and Oconee due to the formation and reformation of social territories and subsistence systems associated with settlement along a blackwater swamp compared to faster-flowing river systems to the east and west.

Jones, Douglas [28] see Quitmyer, Irvy

Jones, Brian (University of Connecticut)

[61] *The Thirty-Three Year History of Cultural Resource Management at the Mashantucket Pequot Reservation*

The Mashantucket Pequot Reservation is today one of the best-researched heritage landscapes in New England. Cooperation between the Mashantucket Pequot Tribe and UConn archaeologists has been positive and ongoing since the early 1980s. Initial heritage management work on the Reservation focused on ethnohistorical research and the documentation of Pequot homesteads as well as important off-reservation historical sites such as Mystic Fort. Archaeological work was largely limited to extensive reconnaissance surveys aimed at identifying undocumented sites. With the success of Foxwoods Casino and the expansion of the tribal land base in the 1990s, Reservation development increased at a rapid pace and tribal archaeology shifted to contract-based Cultural Resource Management efforts. Development resulted in a notable increase in data recovery excavations of threatened sites. With the establishment of the Mashantucket Pequot Museum and Research Center, and a Tribal Historic Preservation Office, research and mitigation efforts continue under a more formalized in-house organization that includes full-time staff and relies on cooperation and communication between many Tribal departments.

Jones, Jennifer (University of Cantabria), Ana B. Marin Arroyo (University of Cantabria) and Michael Richards (University of British Columbia)

[134] *Isotopes and Environments: Exploring Palaeoenvironmental Change during the Middle and Upper Palaeolithic in the Cantabrian Region, Northern Spain*

The Cantabrian region northern Spain was an archaeologically important region throughout the Middle and Upper Palaeolithic, and was home to some of the last surviving Neanderthals in Europe, and during the Last Glacial Maximum the region acted as a refugium for plants, animals, and humans. Changes in the environment are thought to have been driving factors behind the extinction of the Neanderthals, the rise of Anatomically Modern Humans (AMHs), and later the development of the rich cave art assemblages. Carbon and nitrogen stable isotope analysis of hunted animal bone collagen from Palaeolithic levels of archaeological sites can be used to understand past environments at this time. Changes in the environment including factors such as temperature, aridity produce different isotopic signatures within plants, and the animals that consume them, and analysis of these specimens on a large scale. This research uses large scale isotopic analysis of analysis of animal bones, before making comparisons to existing zooarchaeological assemblages, to characterise how the environment changed, and human responses to these environmental changes throughout the Middle and Upper Palaeolithic in this archaeologically important region, at this crucial time in human evolution.

Jones, Travis (The University of Georgia), Todd Kristensen (The University of Alberta) and Jeff Speakman (The University of Georgia)

[148] *Western Canadian pXRF Obsidian Sourcing*

In January of 2015, researchers from the Royal Alberta Museum, Canada, and the University of Georgia Center for Applied Isotope Studies collaborated on one of the largest geochemical analyses of archaeological obsidian via portable X-Ray Fluorescence (pXRF) to date in western Canada, a region previously lacking large scale obsidian XRF analysis. This study is part of a larger project to synthesize obsidian use in the eastern Rocky Mountains. The Canadian sample consists of approximately 750 artifacts from throughout the province, representing much of Alberta's prehistory. The pXRF methodology used here has been successfully implemented in a wide range of geographic contexts to source meta-volcanic artifacts. Comparing trace elemental concentrations to known geologic sources, we seek to gain insight into prehistoric obsidian procurement and use in the region. Preliminary analysis demonstrates the majority of the samples' geologic origins are from known sources in the northwestern United States (primarily Idaho), British Columbia, and Alaska. This study is a first step toward expanding our understanding of obsidian resource procurement and transportation throughout the eastern Rocky Mountains. This information can be incorporated into other data sets in order to establish postulates for possible community home range dimensions, differential access to goods, and trade patterns.

Jones, Eric (Wake Forest University)**[174]** *GIS as Method or Theory: The Settlement Ecology of Middle-Range Societies in Southeastern North America, A.D. 1000–1600*

In this paper, I explore the relationship between method and theory in spatial archaeology that employs Geographic Information Systems (GIS). I do this through an examination of the settlement ecology of societies of varying sociopolitical complexity in the southeastern United States. I use GIS to estimate past environments and landscapes and record attributes of settlement sites, their catchments, and surrounding areas, which I then analyze using spatial statistical methods. Comparisons of different sets of sites and different landscapes around them show hierarchical Mississippian and egalitarian Piedmont Village Tradition (PVT) communities had different settlement strategies and occupied different environments. These patterns suggest certain environments were more conducive to the appearance and persistence of sociopolitical complexity. This interpretation has a cultural ecological ring to it. However, a complete explanation requires a combination of cultural, behavioral, and historical ecological theory, especially when we account for the appearance of Mississippian traits on a small number of later PVT sites. This case study offers an opportunity to examine the role of GIS in the entire research process. Additionally, it provides a basis for a discussion of the role of GIS in the past, present, and future development of archaeological methods and theory.

Jones, Ashley (Raba Kistner Environmental)**[186]** *Moderator***Jones, Terrah (UCLA Cotsen Institute of Archaeology), Jennifer Larios, Rudi Vanzin, Brittany Jackson (UCLA Department of Anthropology) and Jacob Bongers (UCLA Cotsen Institute of Archaeology)****[205]** *Houses on the Hill: Preliminary Results of the Excavations at Casa Grande (PV57-42) in Chincha, Per*

This poster presents the results of the preliminary excavation work done at sector A of the site Casa Grande (PV57-42) in the Chincha Valley, Peru. Initial field work focused on determining both the construction technique used to build these extensive terraces and identifying how these spaces were used by the mid-valley Chincha inhabitants. Excavation and preliminary laboratory processing focused on the ceramics and botanical remains recovered during the active field season, with further analysis pending exportation. These initial results yield promising information about the use of space within a sub-set of the terraces, as well as a glimpse into the different types of industry that were practiced within the mid-Chincha Valley during the Late Intermediate Period and Late Horizon.

Jones, Emily Lena (University of New Mexico)**[218]** *North-South as Well as East-West: Moroccan and Iberian Pleistocene-Holocene Archaeofaunas in an Atlantic Context*

While Pleistocene-Holocene archaeofaunas from the Iberian peninsula are relatively well-documented, these data are often considered in isolation from the larger Atlantic context. In this paper, I consider archaeofaunas from Eastern Iberia—Portugal and the Galicia region of Spain—in comparison with what we know about animal exploitation in Atlantic Morocco and the east coast of North America. I assess the nature and completeness of the archaeofaunal record in these regions and explore proposed differences in exploitation patterns.

Jones, John [238] see McKillop, Heather

Jordan, Alissa (University of Florida)**[3]** *Contemporary Archaeology of Haitian Vodou Caching*

Kneeling on bare earth, the Priestess takes a handful of store-bought confections from their glinting metallic bag and tosses them into a living cache. Candles and carved stones protrude at the sides of this hole, marking intrusions made and remade so many times they have now been lost to memory (even as their matter persists). Following Victor Buchli and Gavin Lucas' call to study contemporary material culture archaeologically, this paper uses and presents ethnographic data collected from observing a series of contemporary Haitian Vodou caching rituals over 4 years. It presents an event-based analysis which considers the creation and maintenance of caching practices as expressive and material networks which are a co-mingling of past, present, and future.

Jordan, Stacey (AECOM)**[51]** *Colonizing the Colonial: Viewing Influence through the Lens of Coarse Earthenware at the Dutch East India Company Cape of Good Hope, South Africa*

Archaeological collections are more than a record of form and function. Historiographic analyses can assist in placing material remnants in their broader social context. Investigations of the production, producers, use, and users of locally produced coarse earthenware at the seventeenth- and eighteenth-century Dutch East India Company Cape of Good Hope illustrate the complex fractals of cultural influence in this particular multi-cultural context. Here, like in many colonial situations, power was exerted not only over the colonized—itsself not a single homogenous group—but over and between various populations of the colonizers. Moreover, cultural identity was simultaneously curated and conflicted through the use of material culture. The materially necessary adjustments in daily experience in colonial contexts create an environment ripe for the development of new syncretic identities. Without denying the inherent imbalance in power dynamics in colonial situations, analyses of material cultural can help reveal its role in the subtle shifts of culture and identity that occur in the forgotten moments of everyday experience.

Jordan, Keith (California State University, Fresno)**[117]** *Human Sacrifice at Tula: Reputation, Representation, and Actuality*

Since the mid-twentieth century, it has been a staple of the archaeological and art historical literature on Tula, echoed in popular coverage of the site, that its art is dominated by themes of human sacrifice, and that Toltec involvement in this practice exceeded that of prior Mesoamerican cultures in scope and intensity. In fact, there are no direct representations of human sacrifice in Tula's art. Although the eclectic Tula art tradition drew on many sources, it rejected the graphic portrayals of sacrifice and bloodletting characteristic of Classic Maya and Veracruz styles in favor of the more indirect sacrificial imagery derived from Teotihuacan art. My paper examines both the archaeological and the iconographic evidence of human sacrifice at Tula to present a more nuanced and current assessment of the role of ritual violence in the city's religion and politics.

Jordan, James [217] see Mason, Owen

Jorgensen, Mads [46] see Cheong, Kong

Jorissen, Philippa (Leiden University)

[3] *You Are What You Eat?—Did Food Consumption Reflect Status, Ethnicity or Cultural Differentiation on the Island Of Saba Between the Late 18th to the Early 20th Century?*

Social position, ethnic origin, cultural background and diet are found to be strongly intertwined, therefore faunal remains provide a unique opportunity to explore differences in diet between different ethnic groups and/or social classes. Hence we studied the zoological remains from the pre- and post-emancipation of three archaeological sites on Saba (late eighteenth to the early twentieth century), which were inhabited by different groups of people, such as impoverished people of European descent, freed people of African descent, and enslaved people of African descent. We found that the major components of their diets were fish, molluscs, and domesticated animals. However, the diet on the site that was inhabited by people from all backgrounds was mostly comprised of marine resources which resembled closely the dietary pattern of precolonial times. This site also displayed the least indications for socially high valued foods compared to the other sites. The other two sites, which were inhabited by people from similar backgrounds, sustained a terrestrial based diet. These results further illustrate how zooarchaeological remains used together with ecological concepts can contribute to a better understanding of past life ways and this especially for groups who were barely visible from historical accounts.

Joseph, J (New South Associates)

[243] *Section 106 @ Fifty—A Look Back and a Glimpse Ahead*

My first job in cultural resource management was in 1976, the American bicentennial. While I thus missed the first decade of the National Historic Preservation Act and Section 106, I have been actively engaged since. The first 50 years of Section 106 resulted in profound changes to the field of archaeology. From the growth of the cultural resource industry and private sector cultural resource management firms; to NAGPRA and the treatment of human remains; to the creation of Tribal Historic Preservation Offices; to a profusion of archaeology positions in agencies and institutions; to the creation of a cultural resource trade association (ACRA); to the advent of new technologies ranging from the desktop computer and fax to the GPR, GPS, GIS, and LiDAR; to the proliferation of guidelines and regulations; to the recognition that descendant communities deserve a seat at the table; and to the realization that Section 106 has neglected the public; Section 106 has been significantly transformed. My presentation will look at the changes the first 50 years have witnessed while also suggesting some of the trends that may influence the next 50 years.

[293] *Discussant*

Joy, Brandy [293] see Smith, Karen

Joyce, Arthur [53] see Barber, Sarah

Joyce, Arthur (University of Colorado at Boulder), Sarah Barber (University of Central Florida) and Jeffrey Brzezinski (University of Colorado at Boulder)

[117] *Earth Offerings as Sacrifice in Formative Period Coastal Oaxaca*

This paper considers the relationship between sacrifice and the people, practices, and objects assembled on later Formative Period public buildings in the lower Rio Verde Valley, Oaxaca. Excavations in public buildings at numerous sites in the region have found evidence for ceremonial practices including the emplacement of earth offerings, the interment of human bodies in cemeteries, and ritual feasting. The objects emplaced in public buildings as offerings included ceramic vessels, greenstone, crystal, and animals. Using ethnohistoric and comparative archaeological evidence, we argue that the emplacement of objects and human bodies were simultaneously acts that ensouled and fed animate buildings as well as forms of sacrifice through which people negotiated their relationships with divinities and other universal forces. In feasting people shared in the sustenance provided by deities in return for acts of feeding/sacrifice. The entities assembled on public buildings therefore suggest that transactions between humans and divinities were alimentary in form, defining a Formative-Period version of the sacred covenant documented in late prehispanic and early colonial texts and inferred from representational art found in the lower Verde and elsewhere in Formative Mesoamerica. These sacrificial acts were also cosmogenic in that they reenacted the cosmic creation and renewed the world.

[169] *Discussant*

Joyce, Rosemary (University California Berkeley)

[163] *Rethinking Ceramics as Evidence of Regional Interaction*

In Central America, recent research crosses national boundaries that once divided archaeological analyses, including by identifying historically related ceramics with regionalized names. This paper argues for using contemporary concepts that do not tie us to the culture historical approach, with its equivalences of a people, a material culture, a language, and an identity, to fully understand emerging data. Culture history worked as a preliminary step to clarify relations in areas like Mesoamerica where political centralization and markets led to regional integration of material culture. Central America is different, with an astonishing diversity of things made within much smaller territories. In this paper, I use my work on Honduras' Ulua Polychrome and Las Vegas Polychrome traditions, and related Salua Polychrome of El Salvador and Galo Polychrome of the Nicoya area, to demonstrate a practice-based framework employing the concepts of technological style, communities of practice, and constellations of practice. I argue that the level of action for pottery production and use was the town or local community of practice, not an abstract regional culture or language-based ethnic group. Using models at these scales that take people as active agents will allow the greatest benefit from the newly enriched research landscape.

Juarez, Santiago [128] see De Lucia, Kristin

Juarez, Santiago (University of Illinois at Chicago)**[128]** *The Social Archaeology of Politics*

In this paper, we consider how social archaeology can inform the study of political organization and power, and provide insight into the tumultuous events taking place today. Social archaeology has long made significant contribution towards understanding the conflicts that occur between different classes, ethnicities, and factions. However, social archaeology is equally capable of making important insights into top down processes and address broader topics of state organization and politics. Continuing the tradition, we consider how political systems in the Aztec Empire and the Preclassic Maya region can help unpack and deconstruct the highly polarizing events taking place right now. For example, how can a Preclassic Maya city provide new perspectives in understanding urbanization and inequality? Such approaches are not only rooted within a history of social theory, but also stem from the perspective of a feminist, and a Latino scholar. Our ultimate goal is not just to argue for why social archaeology matters, but also how the diversity of perspectives and research agendas is vital to the survival of our field.

[128] *Chair*

Judy, Glenn P. [217] see Alix, Claire

Judy, Barbara [210] see Adler, Rachel

Junge, Justin (Portland State University) and Shelby Anderson (Portland State University)**[185]** *Using GIS to Evaluate Models of Late Holocene Settlement Patterns in Northwest Alaska*

Changing Arctic coastal settlement patterns are often linked to late Holocene environmental change. In northwest Alaska, archaeologists hypothesize that environmental variability was a major factor in both growing coastal population density between 1000 and 500 ya, and subsequent decreasing population density between 500 ya and the contact era. After 500 ya, people dispersed to smaller settlements in coastal areas, and perhaps, upriver. This hypothesized pattern is based on older research that has not been evaluated with new archaeological data; the proposed geographic distribution of sites has not been examined. We use GIS to evaluate the evidence for a geographic redistribution of Arctic peoples during the Late Holocene. We draw on site location data and site attribute data including site type, number of houses, and average size of houses. These data are incorporated into a GIS database and then global and local Moran's I and Getis-Ord Gi* spatial analyses are used to test whether redistribution occurred and if key settlement locations shifted after 500 ya. The results of this work build our understanding of regional settlement patterns during the late Holocene, and point to a GIS method that is applicable to other regions and temporal scales.

Just, Bryan**[15]** *Painted Media among the Late Classic Maya*

Although no physical examples of paper books are known from the Late Classic Period Maya, scholarly considerations of Maya art have consistently considered this form of painting primary: as the inspiration of—if not the direct source for—representations in other media such as murals, finely slipped pottery, or relief-carved stelae. Due to fundamental differences in scale, form, and content, however, these media more likely played rather distinct social roles. Indeed, existing materials indicate that subject matter could rarely appear in any medium, and artists approached the task of social communication in quite different ways depending on their medium. Through a comparative consideration of the various modes of Late Classic Maya visual expression, this paper will question the presumed primacy of the paper book in Late Classic Maya visual culture and seek to outline how we might deepen our understanding of an object class that is now absent.

Kageyama, Masa [211] see Burke, Ariane

Kahn, Jennifer (The College of William and Mary)**[75]** *Smallholders, Social Practices, and the Advent of Inequality: A Case Study from the Society Island Chiefdoms (East Polynesia)*

I discuss comparative analyses of Society Island residential complexes to understand the role of smallholders in the advent of social complexity. In particular, I investigate the role of commoner production and its relationship to the elaboration of social inequality in late prehistory. Integrated spatial analysis of activity areas, artifacts, and sub-surface features provides data for understanding variation in production and consumption activities (tool production, subsistence production, surplus storage, tribute) at Ma'ohi residential complexes. Analyzed through the lens of the House Society perspective, chronometric trends in the establishment and growth of houses highlight notable differences between Principal and Affiliated houses in terms of access to raw materials, specialized labor, and surplus production. The net results of these actions translated to social and financial strength which would have served to elevate and perpetuate the status of particular houses and their social networks within neighborhoods and communities. Analysis of variation in household activities within the context of community layout allows for an understanding that production and consumption activities are not merely a reflection of household economy, but are a form of interaction and negotiation that structure social relations among smallholders and are linked to inter-community displays of wealth, status, and power.

Kaiser, Bruce (Bruker), Jennifer DeGraffenried (U.S. Army Dugway Proving Ground) and Nathan Nelson (Logan Simpson)**[200]** *A Novel Method to Accurately Source Obsidian and Basalt Artifacts*

Development of a Unique Sourcing and Artifact Analysis Technique and Database for Dugway Proving Grounds in Utah, U.S.A. Using the Tracer III SD xrf laboratory system as a key component, a very precise and detailed methodology was developed for the elemental measurement, material type identification, and geological source location of artifacts found on Dugway Proving Grounds. Following eight steps led to a very precise and accurate elemental analysis of the Dugway basalt and obsidian artifacts and sources in this study. The study involved the source of over 3,000 artifacts both basalt and obsidian, and resulted in ground breaking knowledge concerning the peoples of that time in Utah and surrounding States.

Kaiser, Luke (University of Arizona)

[257] *The Role of Intercommunity Feasting in the Development of Social and Economic Complexity at Early Bronze Age Mochlos*

Feasting is a ritualistic social activity that also serves to strengthen the solidarity of a group or reinforce its hierarchical structure. Most frequently found as an intragroup activity, it also occurs at the intergroup level. In this paper, I discuss intercommunity feasting as a social, political, and economic motivator that generated interactions that flourished during the Protopalatial Period. Several deposits from the Minoan site of Mochlos in Eastern Crete bridge the entire Prepalatial Period at Mochlos (3200–1900 B.C.E.). They are capable of tracing communal eating and drinking from its inception at Mochlos through the final stages of the Prepalatial Period after which a proto-state civilization appears on Crete. I finally compare the evidence from Mochlos with two case studies in Anatolia and Peru. Both of these case studies are of a similar level of complexity to Mochlos and also used feasting to promote and maintain cooperation between interregional allies and rivals. Upon synthesis, I propose that the societies that emerged at the end of the Prepalatial Era were products of not only of cooperative but also competitive interactions between paramount individuals that took place during both large and small scale intercommunity feasts.

Kalawe, Keonelehua [227] see Rossen, Jack

Kaldahl, Eric (Amerind Foundation, Inc.)**[265]** *Amerind Foundation Collection and Archives*

The Amerind Foundation of Dragoon, Arizona, is a private anthropological research center with an 80 year history. The Amerind conducted foundational studies in southeastern Arizona, but is best known for the Joint Casas Grandes Project (JCCP) conducted in Chihuahua between 1958 and 1961. The Arizona collections consist of southeast Arizona sites dating from the Hohokam Colonial Period to the Spanish Presidio Santa Cruz de Terrenate. The New Mexico collection includes material recovered at the Mimbres site of Wind Mountain. Although the collections generated by the JCCP were returned to INAH Chihuahua, the Amerind holds all of the project's photographs, field notebooks, and other archival documentation. For the Arizona and New Mexico projects, the Amerind also maintains extensive archives. Unpublished manuscripts detail surveys in the U.S.-Mexico borderlands from sites in Arizona, Chihuahua, New Mexico, and Sonora. Amerind's longest serving research director Dr. Charles Di Peso, who worked at Amerind from 1948 to 1982, maintained extensive correspondence with colleagues in the U.S. and Mexico: documents that shed light on the history of our discipline. The Amerind encourages researchers to apply to become visiting scholars. Anyone with interests in the Amerind's collections may discuss those interests with Amerind's Chief Curator at this session.

Kamenov, George (University of Florida), Michelle LeFebvre (University of Florida), Susan deFrance (University of Florida), Geoff DuChemin (SEARCH Inc., Gainesville, Florida) and John Krigbaum (University of Florida)**[222]** *Zooarchaeological Records and Isotopic Systematics of Bahamian Hutia (*Geocapromys ingrahami*): Are the Bahamas a Distinct Isotopic Province?*

Although the Bahamas are not geologically part of the Caribbean, they are culturally associated with the rest of the Caribbean Islands. Due to their unique geology the Bahamas can potentially be a distinct Pb and Sr isotopic province when compared to the rest of the Caribbean Islands. Here, we present the results of isotopic analysis of archaeological Bahamian hutia specimens from two precolumbian sites on Crooked Island (Crooked Island 8 and Crooked Island 14) located in the Bahamas, and one site on Providenciales (Palmetto Junction), located in the Turks & Caicos. The data confirm the capability of the Sr isotope system to identify local origin. In contrast, preliminary Pb isotope ratios suggest that Pb in the hutia enamel is contaminated by modern anthropogenic Pb. Sr isotopes, in combination with C, N, and O light isotope ratios help to clarify the nature of Bahamian hutia exploitation during later pre-columbian history (post A.D. 800) and shed light on the role of the animal in human subsistence and economy. Finally, the results are presented within broader biogeochemical context through comparison with geological and late twentieth century Bahamian hutia isotopic signatures that help to establish a robust isotopic baseline for the Bahamas.

Kamenov, George [295] see Krigbaum, John

Kamp, Kathryn (Grinnell College) and John Whittaker (Grinnell College)**[107]** *The Night is Different: Senses and Affordances*

Archaeology has paid scant attention to the differences between diurnal and nocturnal landscapes, and the differences in meaning and use implied and constrained by the change from day to night. We also neglect the multi-sensoral nature of the landscape. Vision is emphasized almost to the exclusion of hearing, smell, and touch. Humans are diurnal animals emphasizing vision, and modern archaeologists are further biased by our brightly lit world of electricity, neon, and LED screens in which a nighttime without artificial light and cultural clutter is optional. We need to examine biology, psychology, and cross-cultural behavior to understand both the limitations imposed by the relative and variable darkness of night, and the potential offered by nocturnal landscapes when analyzed as senses, rather than as views. We discuss the prehistoric world of the southwest, where considering the difference between night and day, may inform us about the lived experience of occupants of the Flagstaff region.

Kamp-Whittaker, April (Arizona State University), Andrea Barker (Whitman Elementary School, Mesa, Arizona) and Margaret Nelson (Arizona State University)**[40]** *Hohokam Communities: Taking Risks and Making Trade-offs*

Hohokam Risks and Trade-offs is the product of research funded by an NSF Coupled Human and Natural Systems grant that focused on the role of social and ecological diversity in reducing risk of food shortfall or supporting food security. Several teaching tools were developed to demonstrate to students the risks undertaken and trade-offs made by prehistoric southwestern groups in the selection of residential locations. The curriculum, based on a platform designed by NASA, engages students in the analytical thought processes undertaken in archaeological research and requires them to synthesize the results of their findings to share in a classroom setting.

Kaner, Simon [152] see Nixon, Sam

Kangas, Rachael [260] see Gidusko, Kevin

Kangas, Rachael (Florida Public Archaeology Network)

[260] *It's a Bird, It's a Plane, It's Public Engagement! One Summer Library Program as an Effective Outreach Platform*

Summer library programming is a crucial element of the Florida Public Archaeology Network's (FPAN) outreach efforts. Library programs are a common and important part of FPAN's work as they allow us to explore multiple approaches to engagement and education. The program "Superheroes of Stewardship" was developed by FPAN for the Orange County Public Library System's summer programming in 2015, and serves as an example of the efficacy of queer archaeology in engaging and educating young audiences. This program is designed to teach children about archaeological methods and stewardship while maintaining some core concepts of queer archaeology, such as non-gendered interpretation of data. This program is similar to the majority of FPAN's programming, however, it was developed as an application of queer archaeology in this type of outreach setting.

Kansa, Eric (Open Context / UC Berkeley)**[261]** *Toward Slow Data in Archaeology*

Digital data play increasingly prominent roles in archaeological research. However, data tend to be considered "raw materials" that fuel scholarship and not as intellectual contributions in their own right. Most attention on "research data management" focuses on "management" where data are considered mainly through the lens of Taylorism (bureaucratic compliance, standards, incentives, and metrics). Research data management largely aims for "Big Data" research opportunities achieved through centralization, economies of scale, and the efficient production of measurable research outcomes. To provoke debate, this paper suggests an alternative model of "Slow Data" that emphasizes thoughtful consideration of data throughout the research process. Our experience with Open Context shows that to be usable by a wider community, data require substantive intellectual investment in modeling and validation. Ideally, researchers should plan for reuse outcomes well before they start data collection. Thus, the intellectual investment underlying data curation must become more integral to the whole practice of archaeology. Rather than simply rewarding high throughput and impact for easily-measured research outputs (papers or even archived datasets), greater recognition for the research process will promote better contextualization of data, leading to meaningful research outcomes from data integration, greater reproducibility, and better ethical practice.

[4] *Chair*

Kansa, Eric C. [176] see Kansa, Sarah Whitcher

Kansa, Sarah Whitcher (AAI / Open Context) and Eric C. Kansa (Open Context & UC Berkeley)**[176]** *Questioning Data Standards in Zooarchaeology*

The scholarly community is giving data increasing attention in recent years, and solutions for data management are emerging. However, seeing data management primarily as a matter of compliance means that we face continued data loss, as many datasets enter repositories without adequate description to enable their reuse. Furthermore, because many researchers have little experience reuse of public data, they lack understanding and incentives to consider changes in their own research practices to facilitate future reuse. Improving data reuse raises the issue of data standards. While many researchers employ standards for simplifying comparisons across datasets, they are constrained by the fact that standards reflect research goals and agendas that are not necessarily universally shared. This paper discusses Linked Open Data (LOD) as an approach to improving data description, intelligibility, and discoverability to facilitate reuse. I present examples of how annotating zooarchaeology datasets with LOD can facilitate data integration without forcing standardization. I conclude by recognizing that data sharing is not without its challenges. However, the research community's careful attention and recognition of datasets as valuable scholarly outputs will go a long way to ensuring that the products of our work are much more widely useful.

Kantner, John (University of North Florida)**[17]** *Discussant***Kaplan, Jessica****[255]** *Tracing the Movement of Quispisisa Obsidian during the Middle Horizon, Peru*

This paper explores variability in the consumption and distribution of obsidian within imperial and local Middle Horizon (A.D. 600–1000) contexts in order to address regional manifestations of imperial control and the role of resource extraction and regulation within the Wari Empire in Peru. During the Middle Horizon, the Wari Empire expanded and maintained control over the Peruvian Andes, often going to great lengths to import and export critical resources obtained from distant regions throughout the empire. This paper addresses the role of obsidian in the Middle Horizon, specifically obsidian from the Quispisisa obsidian quarry located in the Department of Ayacucho, roughly 100 km from the Wari capital. As part of ongoing dissertation research, portable x-ray fluorescence was used to examine and source obsidian assemblages from Middle Horizon contexts and sites throughout Peru and to relate patterns of obsidian consumption and distribution to political, economic, and social historiographies.

Kappelman, John (University of Texas at Austin), Lawrence Todd (University of Texas at Austin), Neil Tabor (Southern Methodist University), Mulugeta Feseha (Addis Ababa University) and Marvin Kay (University of Arkansas)**[22]** *The Tip Of The Horn: Extractive Foraging Strategies and Stone Tool Technologies in Northwestern Ethiopia during the Middle Stone Age*

We present data from open-air MSA sites situated along the trunk tributaries of the Blue Nile River in the lowlands of NW Ethiopia that provide information about the behaviors of anatomically modern *Homo sapiens* in the Horn near the time of its movement out of Africa. The diverse fauna includes mammals, reptiles, birds, and fish from a wide range of body sizes. Stone raw materials include cryptocrystalline quartz and basalt cobbles, both found on the local gravel bars and in exposed basalt flows. Bifacial and Levallois core reduction were used to produce flakes and points, prismatic blades, and extractive tools were recycled. Together, these data suggest that MSA humans were adapted to a riverine-based foraging lifestyle that exploited abundant food resources seasonally concentrated around isolated waterholes and used raw materials found on river point bars exposed during the dry season. Once local foods were depleted, longer distance foraging along the channel to new waterholes functioned as a dry season "pump" to siphon MSA populations up and down along the river systems. These "blue highways" provided highly predictable food, raw materials, and water during an otherwise challenging dry season; movements from one waterhole to another would have effected population movements northward.

Kardulias, P. Nick [112] see Redmond, Brian

Kardulias, Paul (College of Wooster)**[145]** *The Examination of Changing Landscapes through Archaeological Survey in Central Cyprus*

Since 1991, the Mallaoura Valley Survey, part of the Athienou Archaeological Project, has studied the shifting patterns of land use in central Cyprus. The survey work identified 30 loci of human activity in a rural setting midway between Nikosia and Larnaka, major population centers from antiquity to the modern period. The sporadic scatter of artifacts on the surface indicated a low-level but persistent pattern of land use through most periods. As a project that incorporates material from all periods, including the late twentieth century, the research has identified certain consistent land use practices over time. In the past 150 years, the valley has become an agricultural extraction zone that has witnessed two phases of use: (1) In the nineteenth century up to ca. 1970, vineyards and orchards (primarily almond and carob trees) were interspersed among fields of barley and wheat, (2) Over the last 45 years, barley has become the dominant crop, and pastoral stations for sheep, goats, and cattle have become more common. To accommodate these changes, farmers have more land under cultivation, creating fields and terraces with modern equipment. These actions have dramatically transformed the landscape, and in the process had a major impact on archaeological sites.

Karkanias, Panagiotis (The Malcolm H. Weiner Laboratory for Archaeological Science, ASCSA)**[166]** *Microstratigraphic Study of the Neolithic Alepotrypa Cave, Mani, Greece*

Alepotrypa cave is one of the few examples of deep caves being intensively occupied throughout its extension during the Neolithic of Greece. The study of the microstructure and the microstratigraphy of the sediment revealed that the front entrance chambers consist of occupational deposits characterized by constructed clay surfaces and occupational debris. In addition to the several burials, frequent reorganization of the space in the form of fillings, leveling, and resurfacing has resulted to intensive reworking of the deposits. The deposits of the interior chambers of the cave are quite different. They are mainly characterized by extensive and relatively thick smoldered dung-rich deposits often interbedded with thin clay constructed surfaces. The burnt dung deposits are rather transported by the occupants stabling deposits that consequently were burnt in situ in the back chambers. Their association with large amounts of fine pottery and probably burial remains might have to do with some kind of ritual or other not yet identified cultural practices. The final abandonment of the cave is probably associated with the partial collapse of the entrance of the cave and is associated with the capping of the sequence with widespread speleothem formations on the ground.

Karkanias, Panagiotis [189] see Vaiglova, Petra

Karsten, Jordan [111] see Oemig, Alexandria

Karsten, Jordan (University of Wisconsin Oshkosh), Ryan Schmidt (Kitasato University School of Medicine, Sagami-hara), Takashi Gakuhari (Kitasato University School of Medicine, Sagami-hara), Hiromi Matsumae (Japan Society for the Promotion of Science, Tokyo,) and Hiroki Oota (Kitasato University School of Medicine, Sagami-hara)**[147]** *Paleogenetic Analysis of the Eneolithic (4900–2750 cal B.C.) Trypillian Culture from Verteba Cave, Ukraine*

In this presentation, we make use of high-resolution paleogenetic data to better understand the peoples of the agropastoral Tripolye Culture. Verteba Cave is the only known site with associated Trypillian human remains. Here, we explore population origins and the Tripolye people's relationship with local populations from the greater Carpathian and Dnieper regions, as well as possible connections to peoples from the Near East. Our motivation for this study derives from several unknowns. Specifically, archaeological evidence suggests Tripolye origins stem from the interaction of several Neolithic cultures, while a small number of individuals analyzed using morphometric traits suggest a possible Near Eastern origin. We performed Sanger sequencing of the mtDNA control region and high-throughput sequencing (HTS) for several individuals that allowed us to obtain nuclear genetic data. Our preliminary results indicate maternal lineages that are common to modern Eurasian peoples and our HTS results display variants that are common to peoples of the Near East. Analyses are ongoing with plans to obtain whole mitogenome data through the use of in-solution target capture methods, higher resolution genome-wide SNP variation to detect subtle changes in population size, as well as searching for alleles associated with strong natural selection, such as lactase persistence.

Kasper, Kimberly (Rhodes College) and Katharine Reinhart (Mashantucket Pequot Museum and Research Center)**[61]** *The Power of Plants: Recentering Traditional Ecological Knowledge in New England*

Often plants recovered from archaeological sites are not seen as keys to interpreting the agency associated with social contexts and cultural identities. Yet, the physical remains of plants left behind by individuals and communities, like other aspects of material culture, are the result of the choices made, completed actions, knowledge availability, and goals/strategies. This paper highlights and recenters traditional ecological knowledge of the Mashantucket Pequot Tribe from 1000 to 1800 A.D. Additional plant-based data sets from Narragansett, Pocumtuck, and Sokoki archaeological sites will be discussed to situate those plant-based interactions across time and space. Through an investigation of the domesticated and wild plants along with oral histories and historical documents, we gain an understanding of the choices involved in Indigenous foodways and subsistence strategies during one of the most tumultuous times in New England's history. We demonstrate how Indigenous households and communities favored decisions about plants that provided flexibility in their social organization, while also allowing for maintenance of personal identities within and beyond colonized spaces. The materialities analyzed reflect the power of plants and the critical continuities and transformations of "traditional" subsistence strategies of Indigenous communities on an ever-changing landscape.

Katz, Jared (University of California, Riverside)**[35]** *Printing Ancient Music: The Maya Music Project's use of 3D printing and Modeling for Public Outreach*

3D models have the potential to bring archaeological data to life for the public in ways that were previously impossible. My research on ancient Maya musical practices is demonstrative of the various ways in which 3D technologies can create a tactile experience for the public as they learn about archaeology. This paper will highlight some of the ways in which the Maya Music Project will be using 3D models to increase public engagement with the subject. My preliminary experimental foray into public archaeology will begin this fall, when I will present 3D printed replicas of ancient Maya musical instruments to second-generation bands in the LA area who are attempting to incorporate more traditional Mesoamerican musical instruments into the compositions. Each model will be presented with the contextual information of where the instrument was excavated, thus helping the musicians understand the life history of the replicated artifact they are playing. I am also in the process of working with several institutions to create an online collection of 3D scans of musical instruments, allowing people to interact with artifacts and learn about the subject in a new way remotely, from the classroom or home.

Katzenberg, M. Anne [275] see McConnan Borstad, Courtney

Kaulicke, Peter (Pontificia Universidad Católica del Perú)

[56] *The Paracas Phenomenon as an Interaction Sphere during the First Millenium B.C.*

During the first millenium B.C., the southern coast experiments deep changes in social processes from small household formations to complex societies with central places within interaction networks of short, small, and long distance. Thus, Paracas suggests a non-existent homogeneity. Since the Middle Formative, contacts with the north coast lead to a fusion of local and regional features. During Late Paracas regional traditions, dominate spheres characterized by larger sites linked to smaller ones whose products are interchanged in long distance networks.

Kay, Marvin [22] see Kappelman, John

Kaya, Deniz (University of Notre Dame), Deniz Enverova (University of Notre Dame), Mark Schurr (University of Notre Dame) and Meredith Chesson (University of Notre Dame)

[199] *Searching for Complexity: Initial Statistical Analysis of Mortuary Material in Shaft Tombs from the Early Bronze Age I (c. 3500–3000 B.C.) Bab adh-Dhra', Jordan*

The southern Levantine Early Bronze Age (EB) I-III is characterized by the development of fortification systems, intensification of agricultural and pastoral production, innovative water management, irrigation technology, population aggregation, and increasing regionalized expression of EB material culture. Due to these characteristics, various researchers have interpreted this society as the region's earliest urban culture, a chiefdom, a city state, or a secondary state. Recent scholars have begun to question these interpretations, and our work will address the issue by examining burials from the EBIA period that span the pre-settlement through the beginning of the EBIB village at Bab adh-Dhra', Jordan. The cemetery includes hundreds of shaft tombs, each with one to five chambers. The scope of this study is to inventory, organize, and statistically analyze the various artifacts and skeletal material from the tombs in order to gain insights about the social complexity of these people. We hope to acquire a wider understanding about status differentiation between and within shaft tombs, the development of social complexity, and how to quantify social differentiation statistically.

Keegan, William (Florida Museum of Natural History)

[296] *Marginality is the Mother of Invention: A New Institutional Economics Perspective*

It has long been assumed that the original inhabitants of the Bahama archipelago practiced lifeways that were essentially identical to those practiced on their larger neighbors. Recent research suggests that there actually were substantial differences, including a much higher degree of mobility and a focus on maize instead of manioc cultivation. Some of these differences may be attributed to their origins in Cuba, versus Hispaniola; and the possibility that their ancestry can be traced to what are called Archaic Age communities. This paper explores the economic foundations of the Lucayan inhabitants of the Bahamas from the perspective of New Institutional Economics. NIE, which came to prominence in the 1970s, seeks to bridge the gap between Price Theory and Institutional Theory. In this regard it is comparable to bridging the gap between individual and population-level behaviors. NIE emphasizes the relationship between transaction costs and property rights in a modified neoclassical model. The objective in this paper is to expose the relevant variables and cost accounting that are not covered in the neoclassical economic models or in traditional behavioral ecology. By incorporating these variables the margin shifts in ways that better explain the economic foundations of indigenous Bahamian communities.

Keene, Joshua (CSFA, Texas A&M University) and Ted Goebel (CSFA, Texas A&M University)

[69] *The Bonneville Basin and Snake River Plain Connection: Early Archaic Lithic Technology, Geochronology, and Obsidian Procurement at Bonneville Estates and Veratic Rockshelters*

Though often considered parts of two different culture areas, the upper Snake River Plain of southeastern Idaho and the Bonneville Basin of the eastern Great Basin may have more similarities in land use and lithic technology than usually thought. In fact, commonalities can be easily documented in projectile point chronologies, subsistence patterns, and even the use of some of the same obsidian sources. In this paper, we consider the early Archaic Period, when comparable ecological changes affected both regions. Did humans in the two neighboring regions respond with similar adaptive solutions? A unique opportunity to assess the affinity between these two regions is provided by the recent analyses of two deeply stratified rockshelter sites: Bonneville Estates Rockshelter (Nevada) and Veratic Rockshelter (Idaho), both of which have large, well-dated and well-preserved early Archaic assemblages. Here, we focus on raw-material procurement and selection, projectile point forms and technologies, and aspects of technological organization preserved in the lithic assemblages. The new analyses provide a basis for a large-scale examination of human response to climate change and inter-regional cultural interactions.

Keeney, Joseph (University of Alaska Fairbanks)

[124] *An Analysis of a Middle Holocene Faunal Assemblage from the Matcharak Peninsula Site in Alaska's Brooks Range*

The Matcharak Peninsula Site (AMR-196), located in the central Brooks Range of Arctic Alaska, contains a mid-Holocene archaeological assemblage dating between 4,000 and 7,500 cal B.P. and assigned to the northern Archaic tradition. Excavations between 2010 and 2014 yielded hundreds of identifiable faunal specimens preserved in permafrost, making it one of the largest and most well-preserved faunal assemblages found in a northern Archaic context. The assemblage has great potential for elucidating high latitude hunter gatherer land use and subsistence strategies during the mid-Holocene. Northern Archaic technology persisted throughout Alaska and Yukon, Canada from approximately 6,000–2,000 years ago and is thought to reflect logistically-mobile people using multiple weapon systems to exploit a wide range of seasonally-available fauna. This is supported by the presence of multiple taxa, including caribou, Dall sheep, and fish along with bifacial and microcore technology in the Matcharak Peninsula assemblage.

Kehoe, Alice (University of Wisconsin-Milwaukee)

[258] *Thrown to the Fringe: Challenging the Myth of Columbus*

European imperialism, in league with the Vatican, retained the Church's political support by accepting its moral imperative to Christianize everyone not in its communion. Thus, Columbus was a Crusader, and European international law gave heathen lands to the first Christian nation claiming discovery—the Doctrine of Discovery. Two centuries later, the Earl of Shaftesbury's employee John Locke wrote treatises justifying his employer's landlord class enclosing common lands in Britain, extending to justify Shaftesbury's Carolina Colony takeover of American Indian lands: title to land depends on claimant "improving" the land and holding written title exchangeable for money. Nations north of central Mexico therefore had only usufruct privilege. Archaeologists label all those nations' histories "prehistory." The Doctrine of Discovery paradigm incorporating Locke's dicta marginalized scientists outside mainstream archaeology (including Alexander von Humboldt, Carl O. Sauer, Joseph Needham, Baron Nordenskiöld, David Kelley, Gordon Ekholm, Paul Tolstoy,

Robert Heine-Geldern, and, outside of Oceania, Roger Green) as well as many avocational researchers. Challenging America's Malinowskian social charter myth, that Columbus discovered a wilderness New World, these researchers and their data constitute anomalies outside normal science—in Kuhn's terms—in American archaeology.

Keller, Hannah [181] see Peart, Daniel

Kelley, Alice [90] see St. Amand, Ani

Kelley, Krystle (Texas Tech University) and David M. Hyde (Western State Colorado University)

[93] *A Contextual Analysis of Special Finds from the Medicinal Trail site in Northwestern Belize*

This poster details the findings from a contextual analysis of "special finds" artifacts collected at Medicinal Trail from 2004–2014. Medicinal Trail is a hinterland community in the Maya lowlands of northwestern Belize, 5 km east of the large urban center of La Milpa. The special finds collected at Medicinal Trail include an assemblage of artifacts from a variety of non-perishable raw materials including clay, shell, and stone that do not belong to standard categories of ceramic, lithic, and faunal artifacts. Brief descriptions of each artifact are put forward, along with their theorized function and contextual location. A detailed look at these artifacts provides a glimpse into the activities that were taking place at the Medicinal Trail site.

Kelley, Alice, Ana Cecilia Mauricio (Climate Change Institute, University of Maine, Oro), Daniel Sandweiss (Department of Anthropology and Climate Change Inst), Joseph Kelley (School of Earth and Climate Science and Climate Ch) and Daniel Belknap (School of Earth and Climate Science and Climate Ch)

[118] *Combining GPR and Archeological Excavations at Los Morteros: Looking "Inside" a Complex Preceramic Coastal Peruvian Site*

The Los Morteros archaeological site is located on the desert north coast of Peru. This large, elliptical mound (ca. 225 x 200 m, with relief of 14.5 m) is situated on a 3 m high Mid-Holocene shoreline. Limited excavations in the 1970s identified preceramic midden deposits. Subsequent ground-penetrating radar (GPR) survey at the site revealed interior stratigraphy inconsistent with a sand dune or bedrock-cored sand deposit, suggesting human agency in the construction of the mound, rather than occupation of a pre-existing feature. New, more extensive excavations at the site have provided ground truth for the GPR data, allowing a more nuanced interpretation of the construction of the mound. Rather than being constructed of large, vertical walls, as originally thought, the mound is a composite of buildings, stone-floored patios, and midden deposits separated by wind-blown sand layers. By comparing the GPR data in excavated areas with known stratigraphy and identified archaeological remains, a more detailed and accurate analysis of the mound interior can be completed. These results will be useful in planning future excavations of the site and making inferences about site formation and chronology.

Kelly, Robert L. [55] see Robinson, Erick

Kelly, John (The Public Archaeology Laboratory, Inc.)

[61] *The Mill Site at Ohomowauke: An Eighteenth-Century Euro-American Domestic and Industrial Occupation on the Periphery of the Mashantucket Pequot Reservation*

The Ohomowauke site (72-137), located on the Mashantucket Pequot reservation in southeastern Connecticut, contains a mid eighteenth-century Euro-American sawmill and associated domestic structures that would have been situated on the historic border of the reservation. While little remains of the sawmill, the cultural material recovered within and around the domestic structures, including the house of the mill operator's family, provide an opportunity to examine the lifeways of a working class Connecticut family involved with one of New England's first industries. Data from the site has allowed for interpretations on the social behaviors and daily practices of the people living by the mill, as well as their relationships with their Native American and Euro-American neighbors in the area. These interpretations were formed based on analysis of the entire post-contact artifact assemblage from the site, including European manufactured ceramics, items of personal adornment, the architecture of the house and its associated outbuildings, and botanical food remains.

[61] *Chair*

Kelly, John (Washington University)

[74] *Contextualizing Cahokia's Collapse*

The wide scale abandonment of Mississippian towns in the lower midwest by the beginning of the fifteenth century has been the focus of interest for the last four decades beginning with the work of Stephen Williams. The largest urban center, Cahokia, is one of the earliest to be abandoned before the end of the fourteenth century. Recent evidence has been presented on a massive flood in the twelfth century as perhaps an important factor in this process, which occurs over a century later. This presentation focuses on the historical trajectory of the Cahokian polity and the role and interplay of a variety of other environmental, social, and geopolitical factors have played in its "collapse," and Cahokian society's eventual reversion to a tribal level society.

Kelly, Kenneth (University of South Carolina)

[126] *Slave Village Architecture in the French West Indies*

Archaeological work in Guadeloupe and Martinique conducted since 2001 has revealed considerable evidence of the housing used by enslaved laborers in plantation villages, both before and after emancipation. Enslaved housing is remarkably diverse in its construction, diverging from the attenuated range of styles described in historic accounts, and generally follows several trends, whether on sugar plantations, industrial sites, or elsewhere. In addition to variations in construction, the placement of villages, documented on historic maps and recovered archaeologically, has also been seen to follow certain rules, although there are exceptions. This paper discusses the archaeological evidence for the range of architectural styles and emplacements of villages employed in the French West Indies.

[126] *Discussant*

Kelly, Harold (National Archaeological Museum Aruba) and Raymundo Dijkhoff (National Archaeological Museum Aruba)

[220] *Archaic Age Migration and Settlement on Aruba*

The Archaic Period of Aruba falls between 2500 B.C. to 900/1000 A.D. and is characterized by nomadic 'fisher-hunter-gatherers' with a predominantly

marine, coastal orientation, occupying different areas of the island. Their diet consisted mostly out of marine food and to a lesser extent hunting of small game and foraging. The majority of the so-called preceramic sites are coastal shell-middens predominantly located on limestone. The sites of Canashito and Malmok served as formal cemeteries. Both sites have burial characteristics similar to the archaic Tequendama site in Bogotá, Colombia, that is suggestive of a possible migration route towards Aruba. Recently, three sites characterized as temporary campments along the banks of a large rooi system yielded the oldest age within the Archaic Period. These campment sites provide the unique opportunity for beyond shell midden research that will not only provide insights about Archaic Age settlement patterns but also their stone tool kit. Furthermore, new data related to paleo-tsunamis, radiocarbon datings, mtDNA results, pollen analysis, and human dental calculus in combination with site data and fossil bone collagen shed more light on traditional views of the Aruban Archaic age.

Kemp, Kassie (Florida Public Archaeology Network (FPAN))

[260] *Exploring Strategies for Talking to the Public: Learning from 10 Years of the Florida Public Archaeology Network*

The last 10 years of outreach and education has allowed staff from the Florida Public Archaeology Network (FPAN) to experiment with many different strategies for discussing archaeology with the public. Through this experience, we have become better aware of the ways to effectively communicate archaeological concepts and garner an appreciation for our archaeological and historic heritage. This presentation will provide some basic strategies and outline specific programming that we have found successful. Some of the most useful strategies combine numerous approaches to simultaneously engage visual, auditory, and kinesthetic learners.

Kemp, Kassie [260] see Gidusko, Kevin

Kennedy, Sarah (University of Pittsburgh), Parker VanValkenburgh (Brown University) and Katherine L. Chiou (University of California, Berkeley)

[122] *Diet, Status, and Identity in Colonial Peru: Investigations at Carrizales (Zaña Valley, Peru)*

Late sixteenth century Peru was a dynamic period associated with emerging Spanish colonial policies—forced resettlement and tribute extraction—coupled with general demographic decline. Spanish officials and indigenous communities alike had to make difficult choices on how they provided for their households and put food on the table. We examine the effects of this tumultuous period on Spanish and indigenous foodways at the reducción site of Carrizales, located in the lower Zaña Valley on the north coast of Peru. Comparisons of households and middens associated with both ecclesiastical space and indigenous domestic space demonstrate marked differences in local foodways within the reducción. Zooarchaeological and archaeobotanical remains reveal how new foods were incorporated into the diets of both indigenous residents and Spanish officials, and how the status and identity of both parties was maintained through access to specific foods and meat cuts, as well as preparation and cooking techniques. These results highlight the dynamism of colonial life for both indigenous and Spanish peoples, while emphasizing the important role of food as a symbol of status and social identity.

Kennedy, Titus [131] see Langenwalter, Paul

Kennedy, W.

[253] *Discussant*

Kennedy Richardson, Karimah (Autry - Historic Southwest Museum - UCR)

[202] *Discussant*

Kennett, Doug [129] see Hernandez Sarinana, Daniela

Kerchusky, Sarah (University of California, Santa Barbara)

[151] *Nasca-Wari Interaction and Imperial Expansion during the Middle Horizon: Excavations at Zorropata, Nasca, Peru*

The Middle Horizon (A.D. 750–1000) was a tumultuous time in the Nasca region, located on the south coast of Peru. The highland-centered Wari Empire established at least three colonies (Pacheco, Pataraya, and Inkawasi) in the Nasca Valley and its tributaries (Edwards 2010). Local settlement patterns changed drastically in response (Edwards 2010, Schreiber 1999). The number and size of habitation sites in the Nasca and Taruga Valleys decreased but increased in the Las Trancas Valley, away from and perhaps in contention with the Wari. Sites in these valleys were established in more defensible locations. In addition, sites in Las Trancas formed a site hierarchy with Huaca del Loro as an administrative and ceremonial center, a second-tier center (Zorropata), and smaller settlements (Schreiber 2005). Archaeological fieldwork conducted at Zorropata in 2014 aimed to investigate the relationship between Nasca and Wari peoples. In particular, research aimed to elucidate the potential impact of Wari encroachment on various Nasca economic, social, political, and quotidian practices. This paper presents new data, the results of AMS assays from carbon samples, and some preliminary interpretations stemming from excavations at Zorropata.

[151] *Chair*

Kerr, R. Stanley (Marron and Associates), Hannah Mattson (University of New Mexico), Christina Chavez (Marron and Associates) and Toni Goar (Marron and Associates)

[66] *New Evidence for Early Ceramic Use in the Middle Rio Grande Valley*

Recent archaeological excavation of an early Developmental Period village within the Albuquerque city limits has revealed the earliest evidence for ceramics in the Middle and Northern Rio Grande Valley to date. A roasting pit at LA 138927, located immediately adjacent to Montañito Pueblo, contained Alma Plain jar sherds associated with charcoal dated to the early A.D. 400s. The identification of pottery in fifth century deposits in the Albuquerque area is significant, as pottery first appeared in the southwest around A.D. 200 and didn't become widespread until A.D. 500. This early Alma vessel may be part of an expedient phase of early pottery production occurring on the Colorado Plateau from A.D. 150 to 500. The feature also includes the remains of Zea mays, which is typically not found in pre-A.D. 600 contexts in the Middle Rio Grande Valley proper.

Kershaw, Peter [295] see Haberle, Simon

Ketcheson, Kathi A. [35] see Catto, Lisa

Keute, Jennifer (University of Wisconsin-La Crosse)

[181] *Chemical Analysis of Fatty Acid Residues on Archaeological Pottery of Pastoralist Communities in Northern Tanzania*

In the semi-arid climate of eastern Africa, mobile cattle pastoralism has been an essential way of life for at least the past 5,000 years (Prendergast et al. 2013). On the Mbulu Plateau of northern Tanzania, Dr. Grillo of UW-La Crosse has discovered the largest "Pastoral Neolithic" site in the country, which dates to about 3,000 years ago. Based on the animal bones and ceramics found at the site, archaeologists believe the site was occupied by groups of mobile people who herded cows, goats, and sheep. The goal of this project is to carefully select pottery samples to be tested for fatty acid residues left through the storing or cooking of materials. With the assistance of a Gas Chromatograph/Mass Spectrometer (GC/MS), different types of plants or animals were processed in these pottery vessels can be identified. This research will aid in understanding prehistoric modes of pastoral subsistence, cooking practices, and the importance of pottery to mobile herding populations.

Khalidi, Lamya [22] see Ménard, Clément

Khan, Salman [263] see Iriarte, Jose

Kiahtipes, Christopher (Southern Methodist University, Department of Anthropology)

[69] *Complexes, Colonizations, and Climates: Paleoenvironmental Perspectives on Human Biogeography*

From the Desert West of the U.S. to Asia's Tibetan Plateau, David B. Madsen's work focuses on better understanding the perennial anthropological and ecological problems of migration and human biogeography through robust paleoenvironmental and archaeological collaborations. An essential aspect of this body of work is challenging assumptions of homogeneity in cultural and ecological associations in order to consider how they co-evolved through space and time. Current research from the Great Basin and Congo Basin show the continuing value of combined paleoenvironmental-archaeological research for developing a more realistic, robust, and intellectually rewarding picture of human biogeography and its ecological consequences. These two regions are of particular interest because they show surprising similarities despite radical differences in climate and vegetation cover, which argues for similar causal mechanisms at play in both regions. By emphasizing the iterative, processual, and ecological dimensions of human colonization events, archaeologists may gain an important foothold in discussions about conservation, anthropogenic climate change, and the ecological fallout of globalization.

Kidder, Tristram [120] see Storozum, Michael

Kidder, Tristram (Washington University), Edward Henry (Washington University in St. Louis) and Anthony Ortmann (Murray State University)

[132] *Jaketown, Pilgrimage, and Poverty Point Era Sacred Monumental Landscapes in the Lower Mississippi Valley*

Monumental earthworks are a well-attested element of hunter-gather-fisher societies in the Lower Mississippi Valley (LMV) from ca. 7000–3000 cal B.P. Most famous among these earthworks is the Poverty Point site, ca. 3600–3200 cal B.P. However, earthen monuments in the LMV contemporary with Poverty Point remain enigmatic because their roles in the broader political economy of the region are not well understood. We present information from the Jaketown site in west-central Mississippi to illustrate regional variation in monument building and to explore the hypothesis that Jaketown, Poverty Point, and other contemporary mound sites are part of a complex socio-political landscape shaped by myriad forces, principle among them ritual-religious ones that encourage pilgrimage as a mechanism for social integration in the face of increasing demographic, economic, and environmental challenges.

Kidwell, Jasmine (Eastern New Mexico University) and David Kilby (Eastern New Mexico University)

[120] *Modeling Landscape Evolution Across the Pleistocene-Holocene Transition at Blackwater Locality No. 1*

Blackwater Locality No. 1 (the Clovis-type site) served as a catchment for spring-fed streams during the late Last Glacial Maximum, providing a water source for the Paleoindian occupants of the Southern High Plains. During episodes of high effective moisture, water flowed out of the basin via an outlet channel into Blackwater Draw proper. Coinciding with the changing climate of the early Younger Dryas, the flowing waters of the outlet channel were obstructed, impounding the waters of a shallow lake. This study uses the distribution of well-defined stratigraphic boundaries to create a series of surface models corresponding to the Clovis, Folsom, and Late Paleoindian occupations at the site. Stratigraphic data and sediment samples were collected from systematic hand augering of the outlet channel. Where the surface models indicate pronounced changes in the channel, sediment samples were more intensively analyzed to identify their origin and depositional environment. The models, coupled with sedimentary data, shed light on the processes responsible for ponding of the lake and provide snapshots of the changing morphology of the outlet channel, ultimately contributing to a richer understanding of the changing landscape during this critical time in prehistory.

Kieffer, C. L. (Museum of Indian Arts and Culture, University of New Mexico)

[170] *The Impact of Lawrence Straus on Mesoamerican Cave Studies*

Lawrence Straus' life work has focused primarily upon European cave archaeology, with most of his time spent in Spain. However, his research within cave archaeology has in many ways aided the field of cave archaeology in Central America. Straus has both passively and actively helped in the advancement of Maya cave studies from his many roles in academia. As editor in chief for the *Journal of Anthropological Research*, he aided in the publication of numerous seminal works that contributed to the solidification of the field. As a researcher and mentor, Straus has inspired and encouraged research on topics that has previously been underexplored among earlier generations of Mayanists. None of this would have been possible without Straus' dedication to cave research and deep understanding of early man's utilization of dark zones within caves.

[265] *Chair*

Kieffer, C. L. [234] see Killeen, Denise

Kielhofer, Jennifer [242] see Reuther, Joshua

Kilby, David [120] see Kidwell, Jasmine

Kilby, David (Eastern New Mexico University)

[170] *Le Volgu: A North American Perspective on a Biface Cache from the French Upper Paleolithic*

Le Volgu consists of at least 15 exquisitely manufactured bifacial stone tools (17 were originally reported in 1874) found in Saône-et-Loire near the confluence of the Arroux and Loire Rivers, about 60 km (37 miles) west of Le Solutre, the type site for the Solutrean culture. The assemblage is interpreted as an artifact cache or ritual deposit and the artifacts themselves are considered exemplary of Solutrean bifacial technology. This paper reports the results of applying methods developed for the comparative analysis of the relatively more abundant caches of Clovis materials in North America, to this apparently singular Solutrean cache. In addition to providing a window into Solutrean technology and perhaps into Upper Paleolithic ritual behavior, this comparison of Clovis and Solutrean assemblages serves to test one of the tangible archaeological implications of the "Solutrean Hypothesis" for the origins of some North American populations by evaluating the technological and behavioral equivalence of Solutrean and Clovis artifact caching.

Kilikoglou, Vassilis [257] see Gilstrap, William

Killeen, Denise and C. L. Kieffer (University of New Mexico and The Museum of Indian)

[234] *Exploring the Sacred Significance of Cave 2 at Chawak But'o'ob, Belize*

The site of Chawak But'o'ob in the Rio Bravo Conservation and Management Area of northwestern Belize is being investigated by the Rio Bravo Archaeological Survey. The site, located just 2 kilometers southwest of the minor Preclassic- and Classic-Period city of Dos Hombres, is unusual in that it is a modestly sized commoner residential site with a ballcourt. Very unusually, the paired ballcourt buildings are the largest at the site and perhaps along with the adjacent sweat house, are the only ritual structures identified in this ancient community. Chawak But'o'ob's ballcourt complex is further differentiated from others in the Maya area with its close proximity to two caves. Cave 2 is located approximately 10 meters south and west of the ballcourt. This poster aims to explore that cave's connection to rain rituals and the underworld based upon landscape modification near the cave and the artifact assemblage found within the cave. This poster will also explore the temporal relationship of Cave 2's utilization in relation to the temporal occupation of the site, and discuss how this may help explain the construction of a ballcourt within a primarily residential site.

Killick, David [289] see Santarelli, Brunella

Killion, Thomas (Wayne State University)

[264] *Discussant*

Kim, Patricia (University of Pennsylvania, History of Art)

[221] *Trigger Material Culture of the Greco-Roman World*

A recent opinion editorial published in the *Columbia Spectator* by three undergraduates protested the university's core curriculum as consisting of "triggering and offensive material that marginalizes student identities in the classroom." The article was written in response to the assignment of Ovid's "Metamorphoses," which contains scenes of rape and sexual assault. The art historical and archaeological record of the Greco-Roman world similarly includes visual and material evidence that we would translate as disturbingly misogynistic or violent in today's context. From Macedonian palatial mosaics and monumental wall paintings that depict scenes of rape, to issues of gendered roles and spaces, the material record either offends or frustratingly limits what scholars may say about the construction of gendered subjectivities in the Greco-Roman world. My contribution addresses different ways that the material record may be considered in approaching a more nuanced understanding of the production of gender and the stakes of "histories and narratives of exclusion and oppression." I also consider ways to go beyond the pedagogical morass that the Columbia students signal, and explore strategies for teaching ancient "trigger material" in arguing the critical importance of its examination and analysis in the classroom.

Kincaid, Meaghan (University of Alaska Anchorage), Ryan Harrod (University of Alaska Anchorage) and Aaron Woods (University of Nevada Las Vegas)

[215] *Ritual for the Ancestors or Acts of Violence: Biocultural Assessment of Culturally Modified Human Remains*

A number of culturally modified human remains from three sites in Utah were reanalyzed with a biocultural approach that considered the poetics of violence and the role bodies play in cultural memory. The remains analyzed consisted of 22 individuals affiliated with the Fremont and Northern San Juan Puebloan cultures. The focus of this study was to transcend the surficial evidence of dismemberment and mutilation, and to view these bodies as cultural artifacts that could provide deeper insight into how these cultures viewed their dead in the context of culturally modified human remains. We also examined these cultures' depictions of bodies in rock art and figurines to better inform the interpretation of the bodies themselves and the motivations behind body processing. While anthropophagy has often been cited as the explanation for human remain processing in this region, other explanations have been suggested (warfare, witchcraft killing, or ancestor veneration) which may not be inherently violent within the culture. Trauma distribution, cut mark analysis, ethnographic accounts, and site context indicate that there is variation across sites and cultures that highlight the possibility for multiple functions of processed human remains in the prehistoric Great Basin and southwest.

King, Eleanor (Howard University)

[26] *Modeling Maya Markets*

A profusion of data now supports the existence—long doubted—of markets in the Maya area prior to the Postclassic (C.E. 900–1500). Using a range of approaches from examining the effects of market exchange on artifact distributions to identifying marketplaces within sites, researchers have established that markets were important building blocks for Classic Maya (C.E. 250–900) economies. To date, however, models of prehispanic Maya markets remain nebulous. Scholars continue to rely on frameworks drawn from other areas and on often distinctly western concepts to explain Maya market organization and function. While cross-cultural concepts and comparisons can be useful, they need to supplement rather than substitute for the Maya cultural evidence. Using ethnohistorical and ethnographic information, this paper seeks to model how Maya markets may have worked and articulated with other modes of exchange at different geographical scales. The results will be evaluated against archaeological evidence from sites where markets are either identified or suspected to exist. The intent is not to create a single, overarching model, but rather to infuse more of Maya perspective into our current views and to stimulate the development of models that conform more comfortably to how the Maya organized their economic, social, and political lives.

King, Amy [36] see Lennon, Mary

King, Stacie (Indiana University)

[128] *Global Indigeneity in Southern Mexico and the Value of Social Archaeology*

This paper explores the long-term history of the Nejapa region of southeastern Oaxaca, Mexico, and the many groups of people and famous individuals that have called it home. Based on data derived from a variety of archaeological research methods, including archival documents, excavation, survey, oral history interviews, and collaborative research with contemporary residents, I argue that what might be viewed by some as a loss of indigenous identity in the present is rather a multiethnic positionality that was embraced and purposefully crafted over the course of at least 1,200 years. Archaeological research in Nejapa documents the long-standing movement of peoples to and through the region for trade and economic opportunities, frequent social and political repositioning within and between valley-floor towns, rural villages, and high elevation fortified centers, as well as ongoing encounters between various local indigenous peoples, enslaved Africans, Catholic clergy, and Spanish colonial authorities that were not always—and perhaps not often—peaceful. In the end, what emerges is complex story that is difficult to trace and challenging to reconstruct, but which forces us to expand our definition of local indigeneity to one that is at once, and effectively always had been, plural and global.

King, Adam (SC Institute of Archaeology and Anthropology)

[137] *Households, Communities, and the History of Etowah*

Etowah was the home of Mississippian period communities for 550 years. During that time, three distinct communities were created: an initial founding followed by two reoccupations after periods of abandonment. Because abandonment creates points in the life of a community where local traditions can be questioned and modified, they can lead to novel ways of casting identity, social relations, and history. With each new community created at Etowah, households and the larger built environment were organized in different ways. These differences reveal the process of community creation and also the means through which households were integrated into the larger community.

King, Megan

[140] *The Functional Analysis of an Expedient Flake Tool Industry: Preliminary Results*

Expedient technology, which may appear to be indiscriminant from non-utilized flakes and flaking debris, likely constitutes larger components of most lithic assemblages. Both retouched and minimally modified flakes were examined using different methods of lithic analysis. The preliminary results of both a low and high power microwear analysis of the expedient flake artifacts from the Mussel Beach site are reported in this study. The microscopic examination of these artifacts may offer an opportunity to investigate further the exploitation of the environmental and the use of various natural resources for the production of plant and fiber-based technologies.

King, Daniel, Michael Searcy (Brigham Young University) and Kyle Waller (University of Missouri)

[275] *Dietary Patterns of Paquime: New Evidence from Dental Calculus and Microfossils*

As part of a larger multinational project, we gathered and analyzed 112 samples of dental calculus (fossilized plaque) from human remains discovered at Paquimé and other sites in the Casas Grandes river valley to identify various microfossils still present in the silica matrix. Once identified, we used the prehistoric plant remains to reconstruct human/plant relationships present during the Viejo and Medio periods in and around Paquimé. Our data suggest that maize was used throughout both time periods, which supports current theories regarding Paquimean diet. Various types of grasses were also found, as were unspecified types of algae. Using our data, together with what is already known regarding prehistoric plant use in northwestern Mexico, we suggest that the ancient inhabitants of Paquimé and its surrounding environs had a varied plant diet. Further, we claim that other plants were vital to sustaining life outside of dietary needs, as grasses, shrubs, and trees all likely provided necessary resources for the production of prehistoric Paquimean material culture.

Kintigh, Keith [30] see Steponaitis, Vincas

Kirakosian, Katie (Kaplan University)

[258] *Disciplining a Discipline: On In-Groups and Out-Groups and Archaeological Identity Politics Through Time*

Who has claimed and who can claim to hold knowledge about the ancient past has shifted greatly over time in the United States. Throughout the late nineteenth and early twentieth centuries, groups like the Archaeological Institute of America and smaller state-level archaeological societies were founded throughout the United States, which largely formed from local and growing interest in the ancient past. In just the past century, associations, societies, and other groups like the American Anthropological Association, the Society for American Archaeology, and The Register of Professional Archaeology, have also formed, essentially creating a complex array of “in-groups” and “out-groups” among professional and avocational archaeologists. Forging, maintaining, and expanding ones connections to these groups, especially with professional archaeologists, is directly tied to ones ability to produce and circulate knowledge about the past.

[202] *Moderator*

[202] *Discussant*

Kirk, Scott, Amy Thompson (University of New Mexico) and Christopher Lippitt

[64] *Predictive Modeling for Site Detection in Central New Mexico using Remotely Sensed Data on Phenology*

The potential for remotely sensed metrics of phenology and a Multi-Layer Perceptron (MLP) neural network to accurately model potential archaeological sites in central New Mexico is high. Focusing on two different environments, the Galisteo Basin and the Sandia-Manzano Mountain range, this study attempts to distinguish between archaeological sites and their surroundings based on differential growth in vegetation. Using multi-spectral satellite data, a time series of Normalized Difference Vegetation Indices (NDVI) were created to characterize patterns of vegetation growth in the study areas. Through the use of a neural network, these patterns were analyzed to distinguish archaeological sites from their surroundings. By training the network using a series of known archaeological sites, the results of an output activation layer indicate possible locations of previously unknown sites according to similarities in phenology. Treated as a site suitability model, the output activation layer can then be validated using a Receiver Operating Characteristic (ROC) under the curve. The results of this analysis show promise for detecting new archaeological sites in large, open areas such as the Galisteo Basin. However, this technique needs refining in more heterogeneous environments such as the Sandia-Manzano Mountains.

Kisielinski, Caroline [160] see Stone, Jessica

Kiss, Viktória [149] see Szigeti, Anna

Kitchel, Nathaniel (University of Wyoming), Bryan Shuman (University of Wyoming), Joseph Gingerich (Smithsonian Institution/ NC State University) and Erick Robinson (University of Wyoming)

[218] *A Bayesian Approach to the Paleoindian Colonization of the Northeastern U.S.*

Research on the Paleoindian colonization of the northeastern U.S. suffers from numerous chronological problems. These problems are exacerbated by the use of summed probability distributions, which do not take into account the unique sampling issues and specific probability distributions of individual dates and their particular relationships to archaeological contexts. This paper introduces a Bayesian statistical approach to clarify some of these problems and raise new questions about early population dynamics. Bayesian approaches facilitate the critical appraisal of individual dates with other prior knowledge such as stratigraphy, typology/technology, etc. Using these approaches, combined with prior knowledge of lithic raw material procurement, we propose that the first archaeological visible populations in the northeast do not represent a colonization pulse, but a population already embedded on the landscape. Bayesian modeling of early radiocarbon dates suggest the most probable period of entry occurred during the late Allerød, with population expansion during the Younger Dryas leading these populations to become archaeologically visible for the first time. We also propose that various early fluted point types in the region overlap in time and represent similar adaptive strategies suited to the exploitation of Caribou. Paleoenvironmental data from the region will be assessed to explore this hypothesis.

Kitchell, Lindsey [176] see Burt, Amanda

Kjellmark, Erik [222] see Berman, Mary Jane

Kjellström, Anna (Osteoarchaeological Research Laboratory, Stockholm University)

[192] *Slavery and the Subaltern: Bioarchaeological Analyses of Viking Age Swedish Populations*

The definition of slavery during the long Scandinavian Viking Age (A.D. c.750–1100) is far from simple. In recent years, scholars have pointed out that the terminology for slaves, and the attitudes towards unfree labourers, found in Icelandic Sagas, on rune stones or in law codes, actually reflect a significant variation in social rank. Even though slaves and the slave trade constituted an important and determining element in the Scandinavian economy during this time, a material culture clearly associated with slavery is scarce or difficult to identify. In the Mälär Valley of east-central Sweden, human skeletal remains from several hundred graves have been analysed in a holistic study. A range of biological data has been gathered in the form of morphological traits of the skeletons, stable isotope values, and aDNA, and is here combined with sociocultural interpretations to distinguish slaves in the Viking Age milieu. Intersecting identity constructions at the margins of slavery are discussed, and an attempt made to trace subaltern groups in a reconstruction of Viking Age social inequality.

Klarich, Elizabeth (Smith College)

[56] *Breaking with Tradition: Late Formative Pukara in the Northern Lake Titicaca Basin, Peru*

The Formative Period in the Lake Titicaca Basin (1500 B.C.–A.D. 400) is often characterized as a time when diverse groups were linked through their participation in the Yaya-Mama Religious Tradition (YMRT). Small temple centers—characterized by sunken court temple complexes, stone sculpture, ritual paraphernalia, and shared iconography—dotted the Middle Formative landscape across the Basin (800–200 B.C.). In this framework, the temple centers formed a ceremonial network, providing access to non-local goods and other resources for participating communities. One of these YMRT temple centers, Pukara, expanded its size and influence as a regional center in the northern Basin during the Late Formative (200 B.C.–A.D. 200). This paper seeks to reframe the Late Formative in the northern Basin by focusing on evidence of significant breaks with existing traditions, which are reflected in new forms of monumental architecture, stone sculpture and decorated pottery, and shifting settlement patterns. Data from Pukara, which have been collected since the 1930s, are presented and then contextualized using recently acquired excavation and survey data from neighboring valleys. Lastly, the timing and nature of these transformations in the north are briefly compared to new research at Middle and Late Formative centers in the southern Basin.

Klassen, Sarah (Arizona State University), Terry Lustig (University of Sydney) and Damian Evans (École française d'Extrême-Orient)

[262] *Using Adaptive Capacity to Assess the Water Management System of Koh Ker, Cambodia*

Further research to understand what makes agricultural and water management systems resilient is critical for the continued existence and growth of sustainable communities today, especially in urban contexts. Resiliency is a very useful concept for understanding how complex systems, but can be difficult to operationalize. In this paper, we argue that adaptive capacity can be used as a middle-range theory that allows archaeologists to engage in interdisciplinary discourses of system-level resilience. We argue that systems with strong adaptive capacity are more resilient, more likely to persist, and more likely to successfully and actively navigate transformation into new beneficial states. Here, we present the results of an archaeological assessment of the adaptive capacity of the water management system of Koh Ker, Cambodia. Koh Ker was occupied as the capital of the Khmer civilization (~ninth to fifteenth centuries C.E.) for 40 years between 928–944 C.E. We assess the adaptive capacity of the system in terms of its natural, physical, and human

capital and highlight examples of redundancy, equitable entitlements, social learning, and innovation. Assessing the system based on these criteria allows us to build a narrative about the water management system at Koh Ker and assess its overall resiliency to change.

Klaus, Haagen [207] see Hurtubise, Jenna

Klein, Terry

[48] Moderator

[89] Discussant

Klemmer, Amy [225] see McTavish, Rachel

Klokler, Daniela (Universidade Federal de Sergipe - UFS)

[132] *Modified Landscapes, Modified Views: Transformations in Brazilian Shell Mound Archaeology*

For many years, normative approaches to shell mound archaeology in Brazil have characterized hunter-gatherer-fisher (HGF) populations as nomadic groups whose mound sites represent accidental accumulations of refuse, despite the fact that almost all contain numerous burials. A shift in perspective, especially regarding the role of aquatic resources, allowed great advances in the understanding of mound-building activities. A dramatic transformation of the southern Brazilian coast by HGF communities began about 4,000 years ago. During the next two millennia, the coastal plain housed monumental accumulations of shells, some reaching over 30 m in height. Research focused on the ceremonial context of mound construction and the associations between monumentality and ritual performance provides the basis for reconsideration of Brazilian shell mounds as structures that memorialize territoriality, tradition, and ancestral ties. Mollusks and other animal remains that contributed to the construction of these mounds transmit these essential messages, in addition to providing important signals regarding subsistence and ecological conditions.

Knappett, Carl (University of Toronto), Jill Hilditch (University of Oxford) and Duncan Pirrie (University of Exeter)

[214] *Microscopic Mapping of Technological Choice: The Use of SEM-EDS with QEMSCAN on Ceramic Materials*

As instrumentation and software packages become increasingly sophisticated, the microscopic world of material culture comes ever more clearly into focus. In doing so, however, we run the risk of privileging the mineral and the elemental above the human, those complex makers and users of ancient artefacts. It would seem, then, that the importance of bridging analytical scales remains as pertinent now as when David Peacock first critiqued the use of mineralogical and chemical techniques for analysing ancient pottery in 1970. Almost 40 years later, a technique has appeared that allows precisely this—an ability to move from object to sherds, from mineral to provenance and from texture to technological choice—automated scanning electron microscopy with linked energy dispersive spectrometers (SEM-EDS) and QEMSCAN imaging software. This paper highlights the seamless combination of textural and mineralogical data that can be gained from using this technique on ancient ceramic material, using the Bronze Age wares of Miletus in western Anatolia as a case study. We discuss the potential to identify specific technological choices within the production sequence of Milesian ceramic vessels using false colour mineralogical maps of ceramic sections.

Kneisel, Jutta [95] see Weinelt, Mara

Knell, Edward (California State University, Fullerton) and Michael DeGiovine (Atkins)

[155] *Terminal Pleistocene-Early Holocene Lithic Raw Material Conveyance at Pluvial Lake Mojave and the Southern Conveyance Zone, Mojave Desert*

This paper evaluates Terminal Pleistocene-Early Holocene (TP-EH) lithic raw material conveyance patterns around pluvial Lake Mojave and the southern conveyance zone proposed by Jones et al. (2003). Geologic samples from 12 fine-grained volcanic (FGV) source areas around Lake Mojave were submitted for xrf analysis to expand the regional database, and 50 FGV and obsidian artifacts from the Campbell collection and sites along the TP-EH shorelines of Lake Mojave were sourced by xrf to document the mobility patterns around this pluvial lake. Goldstone Variety 1 dacite (70-80 km northwest of Lake Mojave) is the dominant nonlocal FGV as is obsidian from the Coso volcanic field (190 km to the northwest) and Shoshone Mountain (140 km north of Lake Mojave in western Nevada). The Goldstone dacite and Coso obsidian depict a southeast pattern of movement to Lake Mojave and the Shoshone Mountain obsidian a southward movement. We evaluate if and how the xrf data from Lake Mojave fit the proposed southern conveyance zone. Additionally, we use extant xrf data from multiple Fort Irwin and other Mojave Desert TP-EH sites to evaluate the southern conveyance zone at the regional-scale.

Knight, Vernon [8] see Markin, Julie

Knight, Vernon (University of Alabama)

[290] Discussant

Knudson, Kelly [25] see Blom, Deborah

Knüsel, Christopher J. [215] see Pilloud, Marin

Knutson, Jen (University of West Florida) and Robert Lynch (University of West Florida, Department of Chemistry)

[6] *An Ethnobotanical Approach to an Apalachee Ceramic Jar*

A nearly intact, Chattahoochee roughened variety Chattahoochee, Apalachee ceramic jar was excavated in the 2014 summer field season by the University of West Florida Colonial Frontiers Archaeological Field School. It was recovered from the Spanish mission of San Joseph de Escambe situated

in northwest Florida and occupied from 1741–1761. Testing of the vessel for organic residue, specifically *Ilex vomitoria*, may provide evidence to support to a hypothesis that the vessel was used to serve the “Black Drink,” a tea-like beverage prepared from yaupon holly leaves. Five grams of material were removed from the vessel and subjected to Liquid Chromatography Mass Spectrometry (LC-MS) analysis for the purpose of identifying yaupon holly methylxanthine indicators: caffeine, theobromine, and theophylline as well as ursolic acid. The results of this study will further our understanding of the function of the Apalachee ceramic jar in the context of prehistoric practices surviving into the Spanish Mission period of northwest Florida.

Kober, Brent [187] see McAllister, Martin

Koenig, Viola (Ethnologisches Museum)

[58] *The Mesoamerica Exhibitions in the Future Humboldt Forum in the Center of Berlin*

The Ethnologisches Museum Berlin, Germany, will move into a new building called Humboldt Forum in the center of Berlin. The opening is scheduled for 2019. The concept and planning for the new exhibition of the collections from Mesoamerica will be presented and discussed.

Koerner, Shannon (Colorado State University, CEMML), Brett Giles (Colorado State University, CEMML) and Eric Skov (Colorado State University, CEMML)

[115] *Prehistoric Site Discovery and Evaluation Methods in Upland Landscapes on the Eastern Plains*

This study compares the effectiveness of pedestrian walkover and shovel test survey for identifying and delineating prehistoric sites in the eastern Great Plains. The cultural resource program at Fort Riley, Kansas, manages 100,000 acres along the Kansas River in the Flint Hills physiographic province. An archaeological inventory of the Fort has been ongoing since the mid-1990s and less than 30 percent remains to be surveyed at this time. The two survey methods approved by the Kansas SHPO include shovel test pits at a 15-meter interval or pedestrian walkover at a 15-meter interval. In this case, the Flint Hills landscape surrounding Fort Riley plays a large role in choosing an effective survey method. Soil deposition in alluvial and low terrace settings often produces deeply buried prehistoric sites. Upland landscapes, otherwise, have undergone very little soil accumulation and often contain surficial prehistoric sites, even some dating to the Pleistocene/Holocene transition. These differences in landscape along with other tangible constraints, such as time, funding, and workforce, may significantly influence the type and effectiveness of each archaeological survey method in the region.

Koerner, Shannon [155] see Giles, Bretton

Koetje, Todd (western washington university)

[124] *Leukoma Seasonality and Maturity in the Locarno Beach Phase Sites of the Middle Salish Sea*

Leukoma staminea sclerochronology data are now available from several mainland sites along the middle portion of the Salish Sea dating to the Locarno Beach Phase (~3500–2400 B.P.). Western Washington University field schools have conducted several seasons of test excavations, resulting in an extensive collection of shell from spatially distinct sites of this phase. *Leukoma* seasonality and maturity data from these sites will be used in combination with a modern sample of to address questions of site integrity, season of occupation, and placement in the regional context of Locarno beach sites.

Kohler, Timothy [65] see Ellyson, Laura

Kohler, Tim (WSU/SFI/CCAC)

[171] *Gini Coefficients and the Measurement of Inequality: An Introduction*

We briefly explore the history and current use of Gini coefficients, emphasizing the relatively few studies previously completed in archaeology. Then we explore the behavior of this measure against a variety of theoretical distributions, showing that it makes a useful though imperfect statistical summary of interesting phenomena. Finally, we present Gini coefficients for a variety of contexts drawn from prehispanic Pueblo societies. Archaeological thought on emerging inequality has tended to emphasize phenomena at just one end of the population distribution. Gini coefficients and similar distribution-based measures usefully bring “population thinking” into the discussion.

[201] *Discussant*

[171] *Chair*

Kohut, Betsy [127] see Galvan, Melissa

Kohut, Betsy (Millsaps College), George J. Bey III (Millsaps College), Tomas Gallareta Negron (INAH), William Ringle (Davidson College) and Evan Parker (Tulane University)

[127] *An Examination of Regional Variation in Early Middle Preclassic Ceramics of the Puuc Region, Yucatan, Mexico*

In the last decade, major strides have been made in the study of early ceramics in the northern Maya Lowlands. Long considered to lack ceramic occupations dating before the late Middle Preclassic (600–300 B.C.) it is now recognized that communities were founded throughout much of the northern Maya Lowlands, particularly in the Puuc and northwestern Yucatan Peninsula, by 900–800 B.C. This paper examines similarities and differences among these early pottery complexes at various occupations in the Puuc region. Although early ceramic using communities show similarities in a number of ceramic types and varieties, regional variation is present even at this early date. Variation among the earliest ceramic complexes in the northern Maya Lowlands suggests that despite culturally similar roots, communities were expressing their identity at the local level through their pottery, perhaps hinting at even earlier occupation of the region.

Kohut, Lauren (Vanderbilt University)

[135] *Surveillance and Control in a Landscape of War: An Examination of Mobility and Fortification in the Colca Valley, Peru*

Mobility is frequently examined in terms of interaction, confluence, and circulation. During periods of conflict, however, roads and paths can become arenas for the negotiation and control of people, lands, and resources, and thus bring into sharp relief the often tense politics of mobility. This paper draws on

regional survey of Late Intermediate Period (A.D. 1100–1450) hilltop fortifications in the Colca Valley to examine the use of fortification to monitor and control mobility during a period of warfare. Methodologically, this paper uses two complementary methods—least cost path analysis and circuit analysis—as a measure of landscape permeability to examine the relationship between fortification placement and probable movement corridors at a regional scale. The results show how the topography of the high-altitude mountainous environment of the Colca Valley canalized possibilities for movement into several key corridors. It is clear that local groups strategically used fortifications to monitor and regulate access to the region, suggesting that control over mobility was a key component in the local defensive strategy. Using these results, I explore how surveillance and control of access to the valley shaped the local political landscape in this region during the Late Intermediate Period.

Kolb, Michael [81] see Bernstetter, Jessica

Kolbenstetter, Marie (Leiden University)

[163] *The Lower Central American Influences on Honduran Polychromy*

Traditionally, polychrome pottery from Late Classic and Early Postclassic Honduras has been considered as falling under or being subjected to the Mesoamerican sphere of influence, as well as showing certain central Mexican affiliations. Yet, the Lower Central American connection has rarely been explored. This connection is nonetheless present as can be observed throughout the diversity of Honduran polychromy. In this paper, the influence of the Greater Nicoyan style on Honduran polychrome vessels and their iconography will be addressed. We will also discuss the spread of new ceramic trends through Honduras in the Early Postclassic. In this aspect, the Gulf of Fonseca appears to hold a prominent role as origin point for the distribution of ceramics, allowing southern influences into western Honduras and southern El Salvador. Comparisons with ceramic material from Greater Nicoya and El Salvador will be presented as possible indicators of these interregional ties. The proliferation of white slipped polychrome will be of particular interest.

Kolianos, Phyllis

[290] *Wood Preservation Dilemmas of Florida's Prehistoric Saltwater Sites: Famous Key Marco and Recent Weedon Island*

Almost 120 years has passed since Frank Hamilton Cushing recovered hundreds of wood artifacts from a peaty muck lagoon at Key Marco, Florida. Relatively few of these extraordinary, fragile wood specimens remain in existence today due to difficulties with excavation and preservation methods in the late 1800s. In 2001, at Weedon Island Preserve, another mangrove peat saltwater site, was discovered containing an ancient waterlogged canoe and pole. The salvage of Florida's longest and only maritime prehistoric dugout in 2011 proved to be a pioneering effort in conservation and, perhaps through the lessons learned, a standard for future saltwater finds.

Koller, Jared (Boston University)

[51] *3D Visualization and Soundscape Applications that Speak to Community Organizational Change on Luzon, Philippines during Spanish Contact*

This paper explores the organizational impact of Spanish contact on the island of Luzon, Philippines from the fifteenth–nineteenth centuries through an analysis of sound landscapes (soundscapes) that are produced by the habitual ringing of Catholic Church bells. Church bells in Luzon were intended to notify local residents of prayer congregation or of impending 'Moro' attacks; however, the bells were also Spanish territorial markers that flaunted power and demanded the attention of residents living within auditory range regardless of their spiritual affiliation. I adopt a landscape approach that searches for correlations between changes in social organization and urban planning evidenced in the archaeological and historical records that are within the auditory range of Catholic churches bells on Luzon and compare those patterns to community organization outside the church bell auditory zone. These patterns are markedly different on coastal communities if compared to the highlands of Ifugao, where in the later Spanish incursions did make significant inroads until the nineteenth and twentieth centuries. Excavation and survey data taken from the field is processed with 3D visualization software applications in order to analyze how sight and sound can inform one another in archaeological analysis and suggest potential social mixing correlations.

Kollmann, Dana

[187] *Bridging the Gap: Bringing Archaeology into the Forensic Forum*

Archaeological excavations are much like crime scene investigations in that to study them, is to destroy them. Consequently, full-scale documentation, cataloguing, and proper packaging techniques are critical components of archaeological and forensic fieldwork. Archaeologists have the additional benefit to law enforcement of being trained to conduct line and grid searches, interpret soils for evidence of disturbance, and perform exhumations using standardized excavation techniques. Law enforcement, however, tends to operate as a closed system and has the propensity to draw upon resources available in their department or those in other regional law enforcement agencies. Arguments for this insular practice tend to revolve around issues of confidentiality and chain of custody. Drawing on case studies, this paper explores avenues for forensic archaeologists to break through the seemingly impenetrable walls of law enforcement and apply their skills to cases involving surface searches and/or the identification and exhumation of clandestine gravesites.

Komp, Rainer (German Archaeological Institute)

[34] *Large Fields—Big Data. Browsing the Meadows of Seip Earthworks, Ohio, using Multiple Gradiometer Arrays*

Surveyed and first published in 1848 by Squier and Davis, the mounds being excavated in early twentieth century, Seip Earthworks today forms part of the Hopewell Culture National Historical Park near Chillicothe, Ohio. While the restored burial mounds are among the largest from the so-called Hopewell culture, the earthworks comprise further two miles of embankment walls forming big circles and a precise square with astronomical alignments, a typical geometric figure at a number of places, which Hopewell people constructed sometime between 100 B.C.–A.D. 500. A Team of the German Archaeological Institute joined the National Park Service in spring 2015 to perform a magnetic survey for the first time on this site. A state-of-the-art vehicle-driven instrument comprising an array of 16 fluxgate probes was applied with great success. Nearly the complete conservation area, a total of 250 acres, has been investigated within two weeks. Special, newly developed software allowed for straightforward processing of huge amounts of data and integration to a GIS environment. The resulting images depict clear views of the underground features, consisting of archaeological as well as huge geological structures. Besides confirming the large geometric enclosures, more subtle features were detected and open new insights.

Konwest, Elizabeth (Indiana University, Bloomington) and Stacie M. King (Indiana University, Bloomington)

[236] *The Early Colonial Period Glass Beads of Majaltepec, Oaxaca, Mexico*

Among burials below the floor of an elite adobe residence, the Proyecto Arqueológico Nejapa/Tavela uncovered 448 fragments and complete glass and jet beads at the early Colonial Period town of Majaltepec, located in the mountains of the Nejapa region, Oaxaca, Mexico. This poster will discuss the likely biography of the beads, from manufacture in Europe to the current display in the local museum. Some of the glass beads match types known to have been manufactured in Spain, France, and Venice. They likely arrived in the Nejapa region with Dominican clergymen tasked to convert and extract tribute from local indigenous peoples throughout Mexico. During excavation, a majority of the beads were found as part of a piece (or pieces) of jewelry with a copper clasp, a few of the beads still strung by cotton thread. Along with the metal knife also found amongst the burials, the beads provide a unique glimpse into the lifeways of Majaltepec residents. Although continuing to bury their dead under house floors, like many prehispanic peoples of Oaxaca, they used European goods as offerings.

Koons, Michele (Denver Museum of Nature & Science), Stephen Nash (Denver Museum of Nature & Science) and Deborah Huntley (Denver Museum of Nature & Science)

[267] *The Reserve Area Archaeological Project*

The Reserve Area Archaeological Project (RAAP) is a collaborative effort between the Denver Museum of Nature & Science (DMNS) and the United States Forest Service. Centered in the Reserve/ Pine Lawn region of the Gila National Forest in New Mexico, this project brings together many extant datasets, such as existing collections in the Field Museum from the 1940s/50s, GIS data from the Forest Service, paleoclimate data, and new research that to date has focused on non-invasive methods. Project activities have included fieldwork to find and properly rerecord Field Museum-excavated sites from the 1940s/50s, pedestrian survey to locate new sites, field research on rock art with Zuni colleagues, compositional analysis of obsidian tools from Tularosa Cave, ground-penetrating radar studies, analysis of existing regional paleoenvironmental reconstructions, analysis of existing archaeological tree-ring date distributions, and analysis of new AMS radiocarbon dates on sandals from Tularosa Cave. Long-term goals are to investigate changes in population density and settlement location as related to paleoclimatic changes and changes in resource availability, needs, and cultural significance/ importance. We will also be reevaluating the chronology of the region through extensive radiocarbon dating and ceramic sequence correlation.

Koontz, Rex (University of Houston)

[117] *The Iconography and History of the Hacha in Classic Veracruz*

The hacha has long served as a key element in the yoke/hacha/palma complex of portable sculpture known chiefly for Classic Veracruz (c. 100–1000 C.E.) and closely related to the Mesoamerican ball game. Scholars have rightly associated hacha iconography with a specific decapitation sacrifice and related that sacrifice to rites surrounding rubber ball game. While this iconographical analysis is sound, it does little to explain the appearance of the hacha as a new category of material object, as well as its distribution in some but not all areas of Classic Veracruz visual culture. This essay will begin to localize and historicize this object and the sacrificial rites with which the object is so closely related.

[209] *Discussant*

[209] *Chair*

Koontz Scaffidi, Beth [92] see Seyler, Samantha

Kornfeld, Marcel (PiRL - University of Wyoming) and Bob Dawe (Royal Alberta Museum, Edmonton)

[21] *Nunataks and Valley Glaciers: Over the Mountains and Through the Ice*

The first peopling of the Americas is characterized by either a coastal route or an ice free corridor during the late Wisconsin glaciation, when continental ice still covered the north half of the continent. While the pendulum has swung somewhat towards the coastal route, no smoking gun exists that will deliver a champion in this controversy. With this paper we would like to present a third option—the "Icy Corridor." We argue that a corridor is an unnecessary feature for Clovis predecessors' terrestrial arrival below the ice sheets. In this presentation, we review the recent genomic data and consider its compatibility with a re-visioned Alberta/Rockies corridor.

Kornfeld, Marcel [244] see Larson, Mary Lou

Kosakowsky, Laura (University of Arizona)

[109] *Discussant*

Kosakowsky, Laura [294] see Moyes, Holley

Kosiba, Steve (University of Alabama)

[105] *Navigating Cusco: Pathways to History and Landscapes of Social Conflict in the Inca Imperial Capital*

In creating Cusco, the Incas assembled a landscape of monuments and pathways that embodied a mythic vision of the past. But how did Cusco's landscape, which was invested with pre-Inca meanings and memories, become Inca? In this paper, I present archaeological and ethnohistorical data from Cusco to explore how Cusco's indigenous people constructed their past under Inca and early Spanish rule. I examine how pathways and landscapes in Cusco—the processions of the Capac Raymi and Situa ceremonies, the environs of the Inca mountain-deity Huanacauri, and the routes used to avoid or resist early Spanish governance—engendered multiple perspectives of Cusco's past. My principal argument is that the indigenous inhabitants of Cusco both negotiated and bolstered their social positions when they walked the city's pathways and participated in rituals that recalled key social conflicts with Incas or Spanish. In tracing these pathways, I move beyond archaeological accounts of "place" that focus only on bounded sites, to instead examine how movement manifests social memory. I also challenge top-down archaeological accounts of Inka origins and imperial history to explore what I term "cultures of articulation"—the ways that indigenous agendas, sites, and memories may obstruct or become entangled with a state's pretensions.

Kosiba, Steve [174] see Hunter, Raymond

Koski, Steven (University of Miami) and John A. Gifford (University of Miami, Emeritus)

[290] *Early Archaic through Middle Archaic Design Elements on Artifacts from the Basin at Little Salt Spring (8SO18), Sarasota County, Florida*
Underwater excavations in the basin of Little Salt Spring by the University of Miami since 1992 have recovered seven artifacts made from bone, wood, and shell with applied design elements from contexts associated with Early Archaic through Middle Archaic periods. These design elements represent some of the earliest known from Florida; as early as 10560 to 10253 Cal. B.P. (2-sigma). An analysis of these artifacts will be presented, with their relative and absolute dates, and compared to regional design traditions.

Kostrzewa, Agata (University of Warsaw) and László Paja (University of Szeged)

[149] *Osteoarchaeological Assessment Of Generalized Stress Indicators in Skeletons from the Tápé-Széntégláégető Cemetery, Hungary*
Generalized stress indicators are non-specific anomalies produced by the body as an adaptive response to biological stressors such as malnutrition, disease, or trauma. The prevalence of these lesions may be related to daily activity, lifestyle, or differential access to resources. Based on archaeological analyses, the Hungarian Bronze Age is associated with significant socio-economic changes, including population increases, agricultural intensification, and the emergence of social inequality. In this study, burials from the Late Bronze Age cemetery Tápé-Széntégláégető are used to evaluate whether differential burial treatment is associated with increased prevalence of generalized stress indicators and perhaps differing quality of life. Individuals were chosen based on associated grave goods (high prevalence and low prevalence). Remains were analyzed using macromorphological methods for recording stress indicators like cribra orbitalia and cribra cranii, linear enamel hypoplasia, periostitis, endocranial lesions, and superficial vertebral changes. Macroscopically visible bone pathologies were also recorded.

Kosyk, Katrina (University of Victoria)

[179] *Notes from the Past: Identifying Communities of Practice within Musical Gestures and Production Techniques of Pre-Columbian Greater Nicoya Aerophones from the Tempisque Period (500 B.C.–A.D. 300)*
Typically, ephemeral aspects of material culture, such as musical gestures and sound, are often overlooked in the reconstruction of Greater Nicoya culture history. Musical instruments offer clues to our understanding of cultural practices and the kinds of interactions between groups of individuals. Developing from recent research based on both archaeological and museum collections, my research examines—from a music archaeology perspective—a variety of highly decorated and culturally imbued ceramic ocarinas, whistles, and flutes. I examine the level of variation within organological and stylistic aspects of precolumbian Greater Nicoya aerophones to demonstrate intrasite micro-scale levels of interaction and communities of practice. I also propose an innovative approach to identifying communities of practice within sound and musical gestures observed through an instrument's construction.

Kotegawa, Hirokazu (Universidad Veracruzana)

[264] *Tradición regional e impacto cultural foráneo: Los logros y tareas a través de las tres temporadas de campo por el Proyecto Arqueológico Estero Rabón*
El sitio arqueológico de Estero Rabón, conocido como un centro secundario de la primera capital olmeca San Lorenzo, se encuentra a unos 12 km hacia el oeste de dicha capital. Según los estudios realizados en esta región y el sitio mismo, el sitio tuvo muy larga ocupación humana a partir de pre olmeca hasta el Clásico Tardío/Terminal llamado la fase Villa Alta. Sin embargo, no existió un proyecto sistemático a través de la excavación arqueológica. Por ello, no habíamos sabido los detalles del desarrollo y de la función del sitio dentro y fuera de esta región del Golfo de México. Por ello, a partir del año 2012, se inició el Proyecto Arqueológico Estero Rabón (PAER) por el objetivo del averiguar la vida de los olmecas de menor rango social. Así, desde enero del 2013, se han llevado a cabo las tres temporadas de campo con excavaciones intensivas por sondeos estratigráficos y pruebas de barreno en este sitio y se arrojaron diversos resultados relevantes. En esta presentación se enfocará a examinar la posibilidad de la tradición regional y el impacto cultural foráneo en el sitio basando en los datos excavados por el PAER.

Kotsoglou, Anastasia (Cornell University)

[77] *Functional Flesh: A Consideration of Bodily Loci in Classic Maya Bloodletting Practices*
Bloodletting is generally accepted as a pan-mesoamerican practice, varying both in ideology and process. The Classic Maya drew blood from two specific areas: men most commonly let blood from their genitals while women more often let blood from their tongue or cheeks. Previous research into the choice of oral and genital perforation for non-permanent piercing includes little-investigated functional qualities, which may have been a key factor for locus choice. I argue that the functionality of these areas was a potentially decisive factor for bloodletting practices by examining vascularity, susceptibility to infection, propensity for hypertrophic scar tissue build-up, and rate of cellular regeneration in order to contrast tongue and genital non-permanent perforation against the viability of other potential perforation sites. The evidence suggests that the chosen locales provide marked physiological advantages and were neither purely ritual nor incidental in their selection.

Kovacevich, Brigitte (University of Central Florida), Michael Callaghan (University of Central Florida), Karla Cardona (Universidad del Valle), Whitney Goodwin (Southern Methodist University) and Katelyn Bishop (University of California, Los Angeles)

[27] *New Investigations at Holtun: A Preclassic Maya Ritual Center*
The site of Holtun is located in the department of the Peten at about 12 km south of the site of Yaxha and 35 km from Tikal. Holtun is considered a civic-ceremonial center and is part of a Group of Preclassic epicenters located south of Yaxha Lake. This paper will summarize the results of the field and lab seasons from 2012–2015. We will also discuss the preliminary results of the analysis of radiocarbon, fauna, lithics, ceramics, and soils. The analyses suggest that Holtun was a Preclassic ceremonial center in this region and has early evidence of social inequality, monumental architecture, and public ritual.

Kovacevich, Brigitte [235] see Crawford, Dawn

Kralick, Kolleen (USFS Medicine Bow - Routt National Forest), Bridget Roth (USFS Medicine Bow - Routt National Forest), Towny Anderson (HistoriCorps) and Molly Westby (USFS Rocky Mountain Regional Office)

[267] *16 by 16—Forest Service Fire Lookout Restorations in the Rocky Mountain Region*
Fire lookouts are symbolic within the U.S. Forest Service. Following the devastating fires of 1910, early fire detection became a priority, and lookout towers began to be built throughout the country. Although technology has practically made lookouts obsolete as early fire warning systems, their historic

significance and a powerful nostalgia makes them the ideal subject for a preservation initiative which focuses on restoration and celebration of these important icons. In 2013, the USFS, Forest Fire Lookout Association, the National Trust for Historic Preservation, and HistoriCorps entered into an MOU which formalizes their cooperative spirit in collaborating on Sixteen Lookout Restorations on USFS lands by 2016. We highlight the Rocky Mountain Regions restoration work with volunteers from HistoriCorps, the Forest Fire Lookout Association, USFS Job Corps, and the USFS Passport in Time program.

Kramer, Karen [279] see Greaves, Russell

Krämer, Thomas [224] see Bouwman, Abigail

Krause, Samantha (University of Texas at Austin)

[130] *Understanding Environmental Thresholds through Geoarchaeology: Case Studies from the Maya Lowlands*

All depositional environments can leave complex records of environmental change over time. We consider floodplains, alluvial fans, and wetlands of the Maya Lowlands at present day Neundorf, Belize. We have documented a rich history of sedimentation, water chemistry, and archaeological data that show a measurable environmental and archaeological signature that date back over 4,000 years in this region. This research uses soil geomorphology to study the chronology and processes of wetland formation. It also seeks to characterize human manipulation of these environments and understand different types of environmental change. We base this work on a suite of techniques: AMS dating, LOI, magnetic susceptibility, XRF/XRD, Pb-210, and micromorphology. We present new findings from our 2015 field season in two major excavations. The first, through an ancient Maya canal and field system exposed the underlying natural floodplain. The second, through an adjacent alluvial fan also exposed the buried floodplain. These represent abrupt transitions 30 m apart: the first from an Archaic floodplain to a human engineered wetland field, and the second a facies change from the karst and alluvial floodplain to the colluvial fan. We compare these facies changes with a range of other abrupt and gradual transitions in the geomorphic record.

[130] *Chair*

Krause, Johannes (Max Planck Institute - SHH), Maria A. Spyrou (Max Planck Institute for the Science of Human Hist), Michal Feldman (Max Planck Institute for the Science of Human Hist), Alexander Herbig (Max Planck Institute for the Science of Human Hist) and Kirsten I. Bos (Max Planck Institute for the Science of Human Hist)

[223] *Genome Analysis of Medieval Yersinia pestis Suggests an Ancient European Source Population for the Majority Of Modern Plague Strains*

Yersinia pestis is among the most notorious pathogens and is thought to be responsible for at least three major Eurasian plague pandemics since the Late Antique. Much has been speculated about the origin of the disease, and its potential migration routes to various parts of the world. Historical documents point toward an African origin for the first pandemic during the sixth century A.D. and an Asian source for the fourteenth century Black Death. Modern molecular data, however, suggest an east Asian origin for all strains based on the high genetic diversity observed in China. Here, we make use of ancient *Y. pestis* genomes isolated from skeletons that span more than 1,000 years of European history to reconstruct the relationship between historical and modern bacterial strains. We find that the two historical pandemic periods gave rise to independent *Y. pestis* lineages that traveled through Europe and later disappeared. The pervasive and worldwide third pandemic, however, derives from a lineage that likely originated during the Black Death, and spread eastwards after leaving Europe to become established in China. Our results thus illustrate how ancient genomes can be used to make inferences about the spread of historically important pathogens.

Krause, Johannes [223] see Bos, Kirsten

Kretzler, Ian [266] see Gonzalez, Sara

Krigbaum, John [134] see Eusebio, Michelle

Krigbaum, John (University of Florida (Anthropology))

[295] *Holocene Seasonality, Mobility, and Diet at Niah Cave (Sarawak, East Malaysia): New Isotope Results on Rainforest Foragers and Farmers?*

Assessment of fine-grained proxies to infer paleoclimate and paleoecology in tropical southeast Asia is hampered by the coarseness of the archaeological record. Advances in technology, however, do permit fresh insights into past rainforest ecologies using isotope ratios from tooth enamel, albeit with very real spatial and temporal limitations. This is especially true for isotopic analysis of incremental growth layers in human tooth enamel. In this paper, oxygen and carbon isotope ratios are reported for 'bulk' and serially sampled molars recovered from Holocene deposits at Niah Cave (northern Borneo). These data are coupled with 'bulk' strontium and lead isotope ratios derived from the same tooth. Oxygen and carbon data, respectively, reflect sequential events of seasonality and diet of each individual sampled, whereas lead and strontium reflect inferred dietary catchment. The data show a complex pattern of life history for different individuals and groups of individuals interred at the site, and underscore diverse patterns of mobility and subsistence. Results are examined against Holocene climate variables in the region. For example, oxygen and carbon results of 'Neolithic' individuals show increased subannual variation, which may correlate with increased incidence of El Niño Southern Oscillation (ENSO) variability during and after the Holocene thermal maximum.

[134] *Discussant*

Kristan-Graham, Cynthia (Auburn University)

[209] *Pondering Prehistory, Texts, and Roads in Yucatan*

Roads in Yucatan, Mexico, were aesthetic, territorial, and communicative systems that both united and divided the landscape. I employ network theory, placemaking, and urban planning and landscape models to analyze Maya road systems at Yaxuna, Coba, Ek Balam, and Chichen Itza as site extensions, markers of identity, and ritual and commercial corridors. It may seem heretical for an art historian to abandon historical documents available for one's arsenal for analysis. However, Gil Stein and others characterize the complicated times when conquerors and explorers met the colonized as the "colonial entanglement." In Yucatan, this entanglement occurred in the sixteenth century; the resultant historical literature is several centuries later than the roads in

question, a timespan long enough to question accuracy, memory, and problematic cultural stances.

[209] *Chair*

Kristensen, Todd [148] see Jones, Travis

Kroot, Matthew (Skidmore College)

[144] *Reinterpreting Winney's Rift: Material Culture, Language, and Ethnogenesis Outside of Iroquoia*

Winney's Rift, located along Fish Creek in Saratoga County, New York, has been the focus of several systematic and publicly reported excavations, as well as countless disturbances by looters, collectors, and amateur archaeologists. This paper reviews the history of material recovery and interpretation by these various parties before reexamining the anthropological significance of the site. Reported artifacts show occupations at the site ranging from two Clovis points through to present-day materials. The most recent systematic professional excavations at the site show the depth and density of materials recovered continuously increasing during the Middle and Late Woodland periods. The excavators interpreted the site as a nucleating central settlement at this time, occupied by Algonquian speakers utilizing pottery, which shared traits with both Ancestral Iroquoian and Algonquian ceramics. In the years since these results were published, nearly all of the concepts utilized in this interpretation have undergone scrutiny in the broader literature. By revisiting the materials recovered from the site and their spatial, environmental, and cultural contexts, this paper shows that the heuristic concept of ethnogenesis as a way of understanding northern Iroquoian speaking communities can also provide insights into those communities that did not become Iroquoian.

Kroot, Matthew [177] see Gokee, Cameron

Krug, Andrew (University of Missouri), Kyle Waller (University of Missouri) and Christine VanPool (University of Missouri)

[66] *Isotopic Approaches to Animas Phase Marine Shell Exchange*

Previous studies of shell exchange in the greater southwest have supported archaeological interpretations of competing exchange networks in which the Hohokam, Sinagua, and Anasazi acquired shell from the Gulf of California, while the Casas Grandes, Mimbres, and western Puebloan groups acquired shell from West Mexico. Notably, these studies found that Animas phase sites, including Joyce Well, clustered with the Casas Grandes shell network. In this study, we attempt to further studies of economic interaction in the borderlands region by comparing carbon and oxygen isotope ratios of Olivella shell from the 76 Draw, a large Animas phase site near Deming, New Mexico, with several published modern Gulf of California datasets. The geochemical analysis of Olivella shells from 76 Draw, as well as other Animas phase samples, will provide a clearer picture of exchange and interactions between Paquimé and the hinterlands.

Krus, Anthony (Scottish Universities Environmental Research Centre)

[285] *Bayesian Chronological Models for Mississippian Fortifications with Bastions*

Bayesian chronological modeling is used to investigate the origins and causes of warfare during the Mississippian Period (A.D. 1000–1500) in the midwestern and southeastern United States. Radiocarbon results from seven Mississippian centers are presented within an interpretative Bayesian statistical framework. The results indicate that bastioned palisades were built and maintained primarily in A.D. 1200–1400. While there are a number of reasons for the origins of widespread intensified Mississippian warfare, it appears to have been sustained by a climate of political instability. Additionally, Mississippian centers continued to construct and maintain palisades for generations demonstrating long lasting social and psychological transformations.

Krussow, Lisa [104] see Cannon, Mike

Kubicek, Richard [112] see Richards, John

Kuckelman, Kristin (Crow Canyon Archaeological Center)

[215] *Ritual Modification in the Context of Social Unrest in the Northern San Juan*

Among the Ancestral Pueblo peoples of the northern San Juan, outbreaks of warfare coincided with periods of environmental deterioration and subsistence stress. The archaeological record of this region contains abundant data that reflect a final period of heightened lethal interactions in the late A.D. 1200s. The data reveal a pattern of attacks that ended the occupations of several villages just before the northern San Juan was permanently depopulated by Pueblo peoples about A.D. 1280. Evidence of these hostilities is preserved in the form of traumatic injuries, perimortem modifications, and the remains of men, women, and children left in abandonment contexts on structure floors or roofs.

However, some fractured and burned remains at Goodman Point Pueblo diverge from this pattern. The contexts of these modified remains suggest that the remains were deposited by residents during village occupation rather than by attackers when occupation of the village ended. This paper explores what the different contexts and treatment of these remains might reveal about the identity of the deceased individuals, the relationship between these individuals and the residents of the village who processed the remains, and about the ritual meanings of both the locations of deposition and of the processing itself.

Kuijt, Ian [37] see Sluka, Victoria

Kuijt, Ian (University of Notre Dame)

[52] *Skull Removal and Mediation of Personhood over the Forager-Farmer Transition*

The transition from forager-collectors to small-scale agricultural communities, in the case of southern Levant the Natufian to Pre-Pottery Neolithic periods, is widely viewed by researchers as a critical evolutionary threshold, one that both sees the development of new economic realities, and at the same time, long-term continuity in select ritual practices.

Numerous studies have put forth functional and symbolic interpretations for the existence of skull removal in specific ethnographic, temporal or geographical case studies, often through the interpretive lens of ancestor worship, community integration, or human conflict and trophy taking. Researchers have yet, however, to critically examine aspects of these arguments or to put forth broader modelling of the long-term development, maintained, and expansion of the social practice of skull removal and modification through the Near Eastern forager-farmer transition. Drawing upon ethnographic and archaeological data, this presentation develops a comparative long-term perspective on human skull removal and modification, and considers how identity and personhood may have been linked to and symbolized by the human skull and face.

Kullen, Douglas

[193] *Archaeological Signatures for Mechanized Threshing Operations in the Midwest and the Plains*

Nineteenth and twentieth century grain threshing operations left imprints on the rural landscape and social fabric of midcontinental North America. Traces of threshing activity are seldom recognized archaeologically, despite the importance of this activity to the history of agricultural development and rural lifeways in the Midwest and Plains regions. Changes in threshing technology followed a chronological sequence with inter-regional variability. Different stages of the technology can be identified and dated through specific archaeological signatures, which are discussed here.

Kuntz, Aaron (Grant County PUD), Andrew Murphy (Grant County PUD) and Brett Lenz (Grant County PUD)

[114] *Archaeological Recovery Associated with the Wanapum Dam Emergency Drawdown, Central Washington State*

In spring 2014, a 60-foot crack was discovered in the Wanapum Dam, a large hydroelectric dam on the mainstream Columbia River. In order to avoid catastrophic failure of the dam the reservoir it impounded was drawn down 26 feet. As a run-of-the-river dam, a complete drawdown is not normally planned, and more than 4500 acres of inundated landscape was exposed for the first time in more than 50 years. Under normal operating conditions, around 1,400 archaeological sites are known to exist along the reservoir margins. As a result of the drawdown, 45 new sites were exposed, ranging in age from the Paleoindian through the historic periods. Our presentation provides an overview of the newly exposed sites and details related to treatment of significant archaeological sites under emergency management conditions.

Kupprat, Felix [256] see Vázquez López, Verónica

Kupsch, Mary [286] see Rafidi, Brianna

Kurin, Danielle [91] see Pink, Christine

Kurnick, Sarah (University of Colorado Boulder)

[54] *Archaeology and the Production of Capital in the 21st Century*

Over the last two decades, archaeologists have increasingly debated whether and how archaeology can be used to promote public welfare and foster progressive social change. Some scholars have emphasized the methodological importance of praxis. Others have emphasized the pragmatic need for public intellectuals. And, still others have emphasized the ethical necessity of community engagement. In this paper, I maintain that archaeology can and should be an ally in the effort to understand, and perhaps even mitigate, one of the most pressing contemporary concerns—social inequality. Pierre Bourdieu has suggested that inequality derives, at least in part, from the unequal distribution of capital, be it economic, cultural, or social. In this paper, I suggest that Bourdieu's framework offers a useful model for archaeologists, and that we can attempt to rectify social inequality—in a small way—by producing forms of capital that benefit the communities for which we work. By doing so, I aim to propose a form of engaged, public archaeology useful to those working in various contexts around the world.

[54] *Chair*

Kurosaki, Mitsuru

[264] *Las características de ofrenda de terminación en La Joya, Centro-Sur de Veracruz*

En el sitio arqueológico La Joya, en el Centro- Sur de Veracruz se han encontrado ofrendas. En la Plataforma Este se encontraron los depósitos de terminación del período clásico medio-tardío 500–1,000 d.C.

Basado en los datos de excavación, en este trabajo proponemos que hay dos tipos de ofrendas de terminación:

- 1) Ofrendas masivas de los materiales, en especial, vasijas y figurillas y
- 2) Ofrendas con presencia cerámica en pares.

En primero, se asocia con los entierros sacrificados y posteriormente se colocó un depósito masivo de cerámica encima de los entierros.

En segundo, se descubre que el depósito consiste en simplemente vasijas, no con figurillas ni entierros. La mayor parte fue la de uso doméstico. Por lo consiguiente, analizamos cada uno de los contextos y observamos los materiales de la ofrenda de terminación en la Joya, Veracruz.

Kurosky, Alexander [103] see Wiktorowicz, Conner

Kurozumi, Taiji [173] see Takamiya, Hiroto

Kusmartono, Vida (Australian National University)

[295] *Reconstructing the Peopling of the Deep Interior of the Equatorial Rainforest of Kalimantan*

Previous archaeological discoveries by Soejono (1977) and Chazine (2010) at Nanga Balang and Diang Kaung in the deep interior of Kalimantan (Indonesian Borneo) have documented human occupation there at c. 3000 B.P. But sites closer to the coastline of Borneo, especially the Niah Caves in Sarawak, have yielded chronologies indicating a much greater span of late Pleistocene (50 Kya onwards) to Holocene occupation. So, did hunter-gatherer

populations also exist in the deep interior of Borneo throughout the same period? Were they present prior to 3000 B.P.? My two seasons of excavation (2013–2014) in two caves in the upper Kapuas Basin indicate at least six different periods of activity, ranging in date (14 charcoal samples) from 15 cal. Kya to recent. Recovered materials include pebble and flake tools, pottery, iron artifacts, marine cowry shells, glass and shell beads, human bones, and a quantity of rice husk. Today, this region is exploited occasionally by Punan hunters and swiddeners, but has no permanent settlement. These new chronologies for human occupation of deep interior equatorial rainforest are significant for the “rainforest debate” of the late 1980–1990s, and confirm the importance of interior Borneo within the prehistory of Indonesia and Island Southeast Asia.

Kutys, Thomas [36] see Lennon, Mary

Kuwanwisiwma, Leigh [267] see Coleman, Julie

Kuzminsky, Susan [204] see Coonerty, Nina

Kuzminsky, Susan (Universidad Católica del Norte, Chile, University of California, Santa Cruz), Tiffany Tung (Department of Anthropology, Vanderbilt University), Mark Hubbe (Ohio State University, Univ Católica del Norte) and Antonio Villasenor-Marchal (Department of Anthropology, Vanderbilt University)
[207] *The Standardization of Prehistoric Cranial Vault Modification Practices in the Andes: A 3D Geometric Morphometric Approach*

Bioarchaeologists have long been interested in documenting the forms and techniques involved in cranial modification and exploring the larger social significance of such practices, particularly in the Andes. While such studies have enriched our understanding of head-shaping practices among pre-hispanic populations, there has been a dearth of research that investigates the individuals who were responsible for carrying out these corporeal modifications on infants. Was the practice carried out by a specialist class tasked with developing and performing the modification techniques? Or was this practice much more individualized and done by parents or other older kin? Our study examines whether the standardization of head-shaping practices among Andean groups indicates that specialists modified infants' heads or whether group variability within general categories of modification may suggest that the practice was conducted by family members at the household level. We conducted analyses using 3D geometric morphometric methods to compare vault shapes within and between prehistoric populations from the central Peruvian Highlands (n=15) and the coast of northern Chile (n=38). The results show distinct spatio-temporal trends in the standardization of this cultural practice and demonstrate that 3D quantitative approaches can discern modification types that are difficult to differentiate using gross visual assessments.

Kvetina, Petr (Institute of Archaeology Prague, Czech Republic), Klara Neumannova (Institute of Archaeology Prague, Czech Republic) and Richard Ther (Department of Archaeology, University Hradec Kralo)
[146] *Technological Variability of Pottery in Long-Term Perspective: A Case of the Neolithic Settlement at Bylany (Czech Republic)*

The paper presents the development of the technological analysis of pottery at the large Neolithic settlement at Bylany (Czech Republic). The aim of the study is to identify technological chains and interpret the technological variability as materialisation of social networks. Technological variability is studied in relation to the chronological and spatial diversity of the settlement area. The approach is based on visual examination of macroscopic features coupled with validation of the observed phenomena by microscopic analysis. The analysis is focused not only on defining technologically distinctive groups of pottery but also on revealing the nature of these groups. For this reason, emphasis is placed on the quantification of observed phenomena. Until recently, complex quantitative analysis was not imaginable without enormous time consuming effort. The development of techniques of automated image analysis brings new possibilities for understanding the nature of the technological variability. It allows us to locate pottery samples in the multidimensional space of relevant variables and to interpret where intentions and accents of potters were in terms of technological behaviour.

Kwan, Daniel (University of Toronto) and Leping Jiang (Zhejiang Institute of Archaeology)

[173] *An Overview of Technological Changes in the Pottery of the Early Holocene Shangshan Culture, Zhejiang Province, China*

This paper will outline diachronic trends in pottery technology and subsistence practices of the early Holocene Shangshan culture (11,400 to 8400 cal. B.P.) in the lower Yangtze Valley, China. It is hypothesized that Shangshan peoples engaged in low-level production of rice and began the process of bringing this crucial cereal under domestication. Early Shangshan pottery was tempered with rice leaves, stems, and chaff, and is the earliest known Chinese pottery tempered with dry organic material and the earliest known fine ware. Later in the Shangshan sequence, there was a shift to pottery tempered with non-organic materials. We are exploring the relationship between changes in Shangshan pottery technology, culinary practices, and the emergence of rice cultivation as factors in the complex human-environmental interaction that occurred in the lower Yangtze Valley after 12,000 years ago.

[173] *Chair*

Kwoka, Joshua (University at Buffalo) and Alyce de Carteret

[179] *Debitage and Diminutive Domiciles: Late-Terminal Classic Lithic Production, Consumption, and Raw Material Availability at El Zotz, Guatemala*

El Zotz is an ancient Maya site located in the contemporary Department of El Petén, Guatemala. Its influence on Classic Lowland geopolitics and the political fortunes of its elites are attested by inscriptions at home and abroad. Dwarfed by funerary temples and palace complexes, multiple small household groups dot the site's periphery. This paper shifts the focus of analysis to populations located toward the opposite end of the sociopolitical spectrum through an analysis of lithic data recovered from 17 Late to Terminal Classic (A.D. 600–980) residential structures. Preliminary results of aggregate and technological analyses of chert and obsidian artifacts are presented. Of particular interest is interhousehold variability in lithic production and consumption practices as indices of economic and/or social differentiation or integration. Furthermore, obsidian data is employed to evaluate current models of obsidian production and distribution for the Maya Lowlands.

La Mattina, Nicco [99] see Sayre, Matthew

Lacquement, Cameron (The University of Alabama)

[119] *Formulating an Energetics Assessment of the Moundville Landscape*

Platform mound building is a key indicator of sociopolitical complexity in the southeastern United States. In this presentation, the human energy employed in earthen monumental construction at the Moundville polity in west-central Alabama is quantified as a means of exploring the organizational variability of the control of surplus labor and material resources in an emerging complex society. To reconstruct the scale of sociopolitical differentiation invested in mound building, the energy necessary to excavate, transport, and compact mound and plaza soils is used in conjunction with data and techniques from other disciplines such as geotechnical engineering, human physiology, human biology, and ergonomics. This cross-disciplinary approach allows for the unit of measure in energetic studies of earthen mounds to be reformulated from person-hours to kilojoules.

Ladefoged, Thegn N. [296] see Mulrooney, Mara

Ladron De Guevara, Sara (Sara Ladron de Guevara)

[264] *El maíz. Iconografía ritual y de poder en la Costa del Golfo.*

Los avances en la arqueobotánica nos han permitido conocer los procesos por los cuales el maíz fue domesticado y hasta hace relativamente poco se creía que su consumo estaba ligado a las necesidades alimentarias y el incremento poblacional. Sin embargo, nuevos datos sugieren que una de las principales causas de la domesticación fue su uso ritual; esta característica constituyó uno de los pilares de la tradición iconográfica mesoamericana ya que se fue complejizando y articulando a otros dispositivos discursivos e iconográficos, específicamente a los lenguajes rituales y de poder. En este trabajo se realizará una revisión de los motivos iconográficos de la Costa del Golfo que asocian al maíz y su cultivo con las prácticas rituales vinculadas al ejercicio y despliegue de poder a lo largo de la histórica mesoamericana.

Ladwig, Jammi (University of Minnesota, Twin Cities)

[11] *The Microscopic World and Curated Collections as Entry Points to Discuss Archaeological Stewardship with Multiple Publics*

The very word "archaeology" conjures interest by the public generally. Finding meaningful ways to engage that interest, however, is less straight-forward for practitioners, educators, and researchers. Sitting within any given repository of archaeological materials are collections in need of additional documentation and analysis, some of which may have not been handled since the time of their initial excavation and curation. Additionally, while much can be learned through microbotanical research (specifically phytolith analysis), the necessary training in the laboratory preparation of samples and their subsequent examination proves a stumbling-block. Questions involving paleoethnobotany are doubtless of interest to many groups of people, but the very use of this term demonstrates how archaeological jargon can discourage the participation of the general public. This paper will highlight several cases where the author has used archaeological/paleoethnobotanical materials in innovative ways in many settings to engage various publics with archaeology, the microbotanical record, and issues of heritage and stewardship.

Laffere, Clint [78] see Nichols, Kristi Miller

Laffey, Ann [235] see Duffy, Lisa

Laffoon, Jason (Leiden University)

[222] *Investigating Animal Trade, Transport, and Translocation in the Precolonial Caribbean: New Isotopic and Zooarchaeological Evidence*

Investigations of the dynamic relationships between humans and (non-human) animals are of interest to a broad range of scientific disciplines throughout the world. In the Caribbean, the complexities of island biogeography, transportation technologies, and human agency converge to condition the spatial distribution of both humans and animals. This region has long been characterized as relatively impoverished in higher order species diversity and scarcity of domesticated animals, yet the precolonial movement of various animals and their physical remains between islands or archipelagoes, and between the mainland and insular Caribbean by indigenous peoples, is evidenced by ancient and modern faunal distributions. However, many questions concerning these processes remain unresolved, including the dating, intensity, and frequency of these movements; the mechanisms involved (transported, traded, or translocated); the number and types of species; and their geographic origins. Here, we highlight an ongoing multi-disciplinary study of animal mobility and exchange in the precolonial Caribbean combining zooarchaeological and isotopic analyses. Results to date indicate the previously undocumented movement of certain mammal species; the early presence of locally born 'introduced' taxa; the continued inter-island transport of animals long after initial colonization; correlations between geographic origins and certain taxa; and macro-regional correlations between human and canine dietary patterns.

[222] *Chair*

Laffoon, Jason [223] see Field, Michael

Laguens, Andrés [91] see Giesso, Martin

Laguens, Andres and Benjamin Alberti (Framingham State University)

[99] *Towards a Situated Ontology of Bodies and Landscapes in the Archaeology of the Southern Andes (First Millennium A.D. Northwest Argentina)*

Past ontologies of Andean worlds have been reconstructed in relation to archaeological landscapes, objects, and contexts. Relational and animated worlds build on Andean concepts such as Apu, wa'ka, and Pacha, as well as Amazonian theories. In our case, we work with Amazonian perspectivism as a broad-based Amerindian ontology to analyze a case from Andean northwest Argentina. Perspectivism provides us with a radically different ontological premise for the world: things do not need to be animated, neither are they perceived as animated; they simply are, fundamentally, animated. More precisely, "subjectivity" is a condition of being and relating as much as its result.

Starting from that premise, we take dwelling as a profoundly relational activity where human and non-human bodies participate actively. Recognizing the theoretical mutuality of the concepts of body and landscape in archaeology, we explore what happens to 'landscape' when we start from an alternative ontology of bodies. To that end, we explore why La Candelaria peoples existed in two different environments (yungas and semiarid valleys) in the first millennium A.D. We argue that perceiving and experiencing a landscape does not exist as such; rather people experience "social" relationships with other beings that inhabit and, indeed, constitute the world.

Lail, Warren (New Mexico Highlands University), Victoria Evans (New Mexico Highlands University), Amanda Aragon (New Mexico Highlands University) and Joaquin Montoya (New Mexico Highlands University)

[65]

A Possible Mammoth Kill Site in Northeastern New Mexico

Several years ago, in a remote canyon in northeastern New Mexico, a rancher found the fragmented remains of what was later determined to be a Columbian Mammoth (*Mammuthus columbi*). In addition to the mammoth remains, now dated to 13,000 B.P., the rancher also found several blades, allegedly in context, of chert that originated on the Edwards Plateau in central Texas (microanalysis of the blades is underway). At the invitation of the ranch manager, we began limited testing at the site in 2010. Since that time, fragmented mammoth remains have been recovered, including teeth, bones, and the tip of a tusk. We have also recovered additional chert flakes mixed with many of the bones. However, because of the fragmented condition of the remains and the narrow canyon in which they are found, context remains uncertain. Moreover, no diagnostic Clovis-era tools have been recovered. We continue our testing at the site in hopes of discovering intact bones and diagnostic stone implements in reliable contexts. Additionally, we are in the process of obtaining Optically Stimulated Luminescence (OSL) dates of the buried soils in order to reconstruct the depositional history of the site. Here, we present our activities and findings to date.

Laluk, Nicholas (White Mountain Apache Tribe), Larry Ludwig (Fort Bowie National Historic Site), Dan McGrew (Bureau of Land Management) and Chris Adams (Gila National Forest)

[78]

Searching for Cochise: The 2015 Archaeological Survey for an Apache Campsite associated with the Bascom Affair

In the winter of 1861, an event took place between the U.S. military and the Chokonon band of Chiricahua Apache under the leadership of Cochise that intensified Apache-U.S. military hostilities for another 10 years. This paper presents the initial pedestrian and metal detector survey results from the Bascom Affair project. Archaeologists utilizing metal detector surveys at military sites have met with great success (e.g., Adams 2000a, 2000b, 2001; Laumbach et al. 2001; Ludwig and Stute 1993; Scott et al. 1989). Adams (2001:110) has suggested that the metal detector is one of the most important tools used today in discovering and defining Apache sites, especially at shallow depths. Use of metal detectors also minimizes disturbance of the land, including the potential for disturbing other sub-surface archaeological remains. Furthermore, because the project employed a "Least Impact" research strategy—based upon Apache tribal best management practices, the use of a metal detector minimizes the usual site damage in terms of excavation and other forms of destructive data collection methods. Moreover, integrative approaches to such research projects involving tribal descendent communities are imperative to form more complete understandings of historical-period Apache life-ways.

Lam, WengCheong (Chinese University of Hong Kong Department of Anthropology), Jianrong Cong (Shaanxi Provincial Institute of Archaeology) and Xingshan Lei (Peking University)

[173]

Formation of Iron Market System in the Capital Area of the Qin and Han Dynasties

Market system plays a key role in the formation of the imperial economy of Chinese early Empire. Previous scholarship usually paid attention to prestige goods in this regard, giving a good albeit partial description about the market system in Early China. Putting in the anthropological discourse of market exchange, this presentation explores the production and distribution of iron objects—one major type of daily-use items—in the Guanzhong Basin according to burial data to better understand the formation processes of iron economy and its contribution to the state finance. This presentation argues that, during the Qin Period, the iron market system was still less developed and circulated iron objects nearby the capital area, whereas a more systematic market system developed only during the Han period, which led to the distribution of iron to more far-flung areas. Alongside the development of cast iron industry, the distribution of iron objects during the Han Period presents a more ubiquitous pattern in burial contexts, indicating a full-fledged market system finally took shape during this critical period.

Lambert, Stephanie (Brigham Young University), Joseph Bryce (Brigham Young University), Jaclyn Eckersley (Brigham Young University) and Paul Stavast (Museums of Peoples and Cultures)

[39]

Collections and Conveyor Belts: A New Way to Look at Artifacts

The process of labeling, measuring, photographing, and classifying artifacts consumes significant amounts of resources for museums and archaeologists. This poster presents technology developed by staff and students at the Museum of Peoples and Cultures at BYU for high-volume cataloging and processing of artifacts. The current project is an integrated system that will reduce basic cataloging tasks from over 10 minutes per item to less than 15 seconds per item. The system automates artifact labeling, photography, basic measurement, and classification for objects smaller than 12" W x 10" L x 3"H. This significantly reduces manual data entry, reduces classification errors, virtually eliminates typographic errors in object labels, and improves long-term accessibility to artifacts and associated data. Using vision recognition algorithms, the system identifies objects as they pass beneath a calibrated camera. A publication quality image is taken and basic measurements are extracted and written to a database. The system allows for better control over collections by having every item in a collection numbered, photographed, and measured for reference and tracking. Time saved by the system allows staff to focus efforts on other tasks.

Lambert, Spencer (Brigham Young University) and Joseph Bryce (Brigham Young University)

[113]

The Elements of Bone: A Look into Fremont Diet at Wolf Village

Fremont diet is an aspect of Great Basin archaeology that has long fascinated Fremont scholars. Excavations which occurred at Wolf Village, a Fremont site in Goshen, Utah, have yielded a large amount of faunal remains which can help archaeologists to identify the types of animals used in Fremont diet. Excavations at the northern most knoll of the site uncovered a large bell-shaped pit filled with a high quantity of faunal remains. The high concentration of bone provided a significant amount of data to analyze, to determine the types of animals being utilized by the Fremont at this site. Dr. Joel Janetski has previously discussed Fremont diet at Five Finger Ridge. He theorized that there was a tendency to discard "low utility" elements of bones that contained less meat than elements such as long bones. At Five Finger Ridge there was a presence of low utility elements of small artiodactyls, such as mandibles and foot bones. Similar high and low utility elements were recovered from the bell-shaped pit at Wolf Village, which probably served as a kill/butchering area due to the presence of these low utility portions.

Lambert, Spencer [113] see Bryce, Joseph

Lamkin, Sarah (Truman State University), Kayleigh Mrasek (Truman State University) and Luke Edwards (Truman State University)

[94]

How to Build an Input File for Binford's Frames of Reference from Existing Data Sources

This poster demonstrates how to build an input file to calculate Binford's environmental and hunter-gatherer frames of reference using available global data standards and GIS technology. Required input values include latitude, longitude, elevation, distance to the nearest coast in km, soil type, vegetation type,

and mean monthly values of temperature and rainfall. All of these data are freely available in global standard data sets (WORLDCLIM: Hijmans et al 2005, World Wildlife Foundation Habitat Types: Olson et al. 2001, Soil Types: FAO-UNESCO 2005 Soil Map, Coast distance: NOAA/NASA 2009) for use as raster files in GIS. Integrating these data with locations of interest through GIS serves to 1) standardize the input data compared to collecting locally available weather station data, 2) eliminate the problem of missing data in some regions, and 3) automate the process of building an input file, making it as easy to compile data for hundreds or thousands of locations as it is for only a few locations. The resulting input file structure can be run through the EnvCalc 2.1 program to calculate Binford's frames of reference so researchers anywhere in the world could use these variables to leverage learning from the archaeological and ethnoarchaeological record.

Lamkin, Sarah [94] see Pintar, Elizabeth

Lanata, Jose (LCHES - University of Cambridge), Claudia Briones (IIDyPCa-CONICET), Adrian Monjeau (F.Bariloche-CONICET), Andrés Vaccari (F.Bariloche-CONICET) and Florencia Bechis (IIDyPCa-CONICET)

[272] *Evolutionary Archaeology and the Anthropocene*

Recently, the Anthropocene has challenged us to reflect on the era we live in and about the very terms in which we can frame its definition. As a geological era, the Anthropocene seems to be the field of geologists, paleontologists, and biologists. However, now that the impact of *Homo sapiens* on the planet became focus of preoccupation, an excellent opportunity has arisen to rethink the relationship *H. sapiens*—nature from the viewpoint of other disciplines. As controversy, the Anthropocene can allow us the revision of paradigms entrenched for centuries in terms of the scientific criteria that has guided the characterization of a "new era." Since the 1980s, Evolutionary Archaeology has studied numerous cases showing how *H. sapiens* has created different and new ecological niches, modifying as a result not only the living conditions of animals and plants, but also of ecosystems. Our framing of the potential contribution of Evolutionary Archaeology to the Anthropocene-controversy aims at pondering criteria and indicators to establish the onset of this "new era" from a perspective that should be transdisciplinary in a comprehensive sense.

Lancelotti, Carla (Universitat Pompeu Fabra)

[125] *Untangling Activity Areas in Open Spaces: Ethnography at Jandhala, North Gujarat, India (part II)*

Jandhala is a small village in the rural countryside of North Gujarat (India) where many of the activities related to food processing are still non-mechanized. One compound within the village has been investigated ethnographically to test a novel methodology to unravel activity areas. In this paper, we present the results of investigations in the courtyard of the compound. Over 170 samples were collected, in a regular grid of 2 x 2 meters, and analyzed for multi-element geochemistry. We compare our results with the outcomes of previous analyses on the use of domestic space within the house. In addition, we analyze the effects of anisotropy (directionality of movement) and physical barriers (walls, fences, and accumulations of different material) on chemical proxies. Our experiment is not intended to create direct parallelisms between present and past-times, but to test the reliability of our methodology against known activities. We conclude that the use of ethnography and geostatistical approaches can help in unlock the patterns and identify activity areas in a controlled environment.

[125] *Chair*

Landau, Kristin (Northwestern University)

[212] *Copán's Preclassic Pioneers: New Evidence from the San Lucas Neighborhood*

Recent work in the San Lucas neighborhood outside of Copán's urban core discovered significant human occupation in the Late Preclassic Period—centuries before the first king came to power. Construction materials, ceramic styles, obsidian tools, human remains, and radiocarbon dates from three households attest to the early and continuous settlement of this area in the foothills south of the Copán River. This paper reviews the evidence for San Lucas's Preclassic population, and its significance for a revised understanding of early Copán culture history. Comparisons are then made to known Preclassic settlement within the southeast borderlands region, to begin to explore the cultural and ethnic affiliation of Copán's pioneering families.

Lane, Brian [296] see DiNapoli, Robert

Lange, Frederick (Smithsonian Institution Department of Anthropology)

[53] *Pioneering Archaeology in Nicaragua (1983)*

Three years after the Triumph of the Sandinista Revolution in 1979, this author was invited by the Council of National Reconstruction to assist Nicaraguan cultural authorities in developing an archaeological research program for the Pacific side of the country. The revolutionary government had made a conscious decision to prioritize the protection and investigation of the cultural heritage. I had conducted extensive research in northwestern Costa Rica, known to be similar to southern Pacific Nicaragua. One of my colleagues at the University of Colorado-Boulder, where I had relocated, was Payson Sheets, who had researched extensively in El Salvador; I thought he would be able to compare northern Pacific Nicaragua with El Salvador. Payson also was a lithic specialist and was interested in volcanic landscapes; I raised funds from a private foundation to bring him along. We visited and recorded 26 sites and defined 4 lithic zones and 4 ceramics zones. In 1992, the University of New Mexico Press published *The Archaeology of Pacific Nicaragua*, written in collaboration with Suzanne Abel-Vidor and Anibal Martinez, which has remained the baseline for research on the Pacific coast of Nicaragua. Finally, we made the phrase "mucho gusto" the saying of the century.

Langebaek, Carl [122] see Bernal, Marcela

Langenwaller, Paul (Biola University, La Mirada, CA) and Titus Kennedy (Biola University)

[131] *Eccleston's Pictograph: The Great Medicine Rock*

During 1851, the Mariposa Battalion was formed to quell conflict between a number of Central California tribes and settlers during the California Gold Rush. The battalion's pursuit of the Chowchilla and Chukchansi tribes led to several important discoveries including a Chukchansi curing shrine and Yosemite Valley. Diarist Robert Eccleston named the shrine "The Great Medicine Rock" and provided a brief description of its use. This is the earliest account of any rock art in California and one of the few descriptions of the function of such a site. Eccleston illustrated 26 of the black and white pictographs, which he remarks was only a sample. He also noted the presence of natural deterioration and apparent differences in age, without specifying

individual pictographs. The site is important because Eccleston's account associates specific design elements with curing. Documentation of the panels in 1987 and again in 2015 using different types of photography and lighting have revealed new elements and enhanced others, providing evidence of at least 10 additional design elements. Many more have likely been lost to weathering. The use of multiple photographic techniques provides the opportunity to compare results between color photography, black & white infrared, and color infrared techniques.

Langlie, BrieAnna (Washington University in St. Louis)

[205] *So Many Chenopods: Paleoethnobotany of the Late Intermediate Period, Puno, Peru (A.D. 1100–1450)*

Following the collapse of Tiwanaku in the Andean altiplano, warfare, sociopolitical balkanization, and a severe drought lead to economic hardships during the Late Intermediate period (LIP) between A.D. 1100 and 1450. Previous research in the region has shed light on how martial conflict between and possibly among competing ethnic groups incited people to live in defensive fortified hilltop villages. Although scholars have previously speculated on the severity of lifeways for residents of hillforts during the LIP, no quotidian data existed to substantiate these hypotheses. Drawing on macrobotanical information collected from Ayawiri, one of the largest hillforts in the northern Titicaca Basin, I reconstruct plant use and foodways during the LIP. Analysis of caches and other domestic contexts indicate LIP peoples relied heavily on quinoa and other *Chenopodium* spp., demonstrating Ayawiri foodways were nonetheless salubrious. I assess the diversity of food assemblages across households to elucidate intra-community economic variation. In doing so, I present a comprehensive understanding of LIP plant use.

Langston, Lucinda [278] see Franklin, Jay

Lanoë, François (University of Arizona)

[242] *Animal Resources and Technology in Eastern Beringia During the Late Pleistocene*

Bone technology is often omitted from discussions about technological variability and functionality in eastern Beringia, where recovered organic artifacts are rare. However, based on discoveries in northeastern Eurasia with good organic preservation, it can be surmised that bone technology was similarly important to Beringian hunter-gatherers during the Final Pleistocene.

Here, we present the results of faunal and spatial analyses of the site of Swan Point CZ4b, the oldest known archaeological site in eastern Beringia (~14,000 cal. B.P.). Faunal and spatial evidence highlight the function of the site as a specialized organic raw material workshop. Beringian people possessed a breadth and depth of technological skills, and this investment suggests that bone technology formed a major part of their economy. Mammals and birds were clearly regarded as raw material sources in addition to nutritional resources.

Most models describing the process and timing of the colonization of Beringia deal with technological change in terms of lithic technology only. The idea that Beringian people relied heavily on bone technology, in a context where the nature and abundance of animal resources were rapidly and dramatically changing, has important bearings on our understanding of this period.

[242] *Chair*

Lape, Peter (University of Washington), Emily Peterson (University of Washington), Jenn Huff (University of Washington), Joss Whittaker (University of Washington) and Lauryl Zenobi (University of Washington)

[252] *Exploring the Island Southeast Asian Neolithic: New Results from Seram Island, Indonesia*

The Island Southeast Asian Neolithic remains a controversial archaeological construction. Traditional theories explain the appearance of pottery, domestic plants, and animals in the region about 3,500 years ago as the result of migrations from Taiwan and SE China. Archaeological and genetic data collected in the past decade do not fit well with those theories, and scholars have begun to investigate new explanations. One area of renewed focus is in the relationship between fishing and farming at the beginning of the Neolithic Period. Our team has been investigating the ways in which fishers and nascent farmers utilized large islands and how those use histories differed on small islands and atolls at different levels of isolation from the large islands. In this paper, we present the results of a 2015 archaeological and paleoenvironmental survey of the large Seram Island and several nearby small islands and atolls, located in eastern Indonesia.

Lapham, Heather (Southern Illinois University Carbondale) and Ronald Fauseit (The Field Museum)

[237] *Meat Consumption and Animal Use at Cerro Danush, Oaxaca, Mexico*

Cerro Danush is located in the Valley of Oaxaca, Mexico, within the Dainzú-Macuilxóchitl region—an area that underwent significant sociopolitical reorganization as the Zapotec state centered at nearby Monte Albán weakened and its regional power declined during the Classic to Postclassic transition. Comparing and contrasting zooarchaeological assemblages from a commoner household, an elite residence, and a ceremonial complex at Cerro Danush provides new insights into differential patterns of meat consumption and animal use during the Late Classic (A.D. 600–900) to Early Postclassic (A.D. 900–1300) periods. This poster presents new data from the 2015 excavations at Cerro Danush's Terrace S25 and newly analyzed data from earlier excavations at Terrace S19 to explore diachronic economic patterns of animal production and consumption within a single residential neighborhood.

Lapp, Jennifer

[86] *The Human Burials of Conchal, Rivas, Nicaragua*

The mounds of Conchal in Nicaragua were originally thought to be domestic refuse mounds, filled mostly with crushed shells and broken ceramics. Only upon excavation was it discovered that there were multiple individuals buried in the mounds. What did this mean to the inhabitants who lived here? Why were these individuals buried with refuse? Using an analogy from across the pond, it is believed that the individuals were not necessarily buried here purposefully. The individuals were possibly placed here to decompose then interred in other parts of the site. Only later the mounds grew in size and then became significant to the population; going from ordinary to extraordinary. This site began to hold meaning with the ancestors being nearby and the mounds giving the inhabitants visible markers of their territory. The populations of inhabitants past and present give this site meaning.

Larios, Jennifer [205] see Jones, Terrah

Larmon, Jean

[234] *Examining the Environment: Pollen Data from Cara Blanca, Belize Pools 1 and 6*

Teetering on the edge of a 60-meter deep cenote, or karstic sinkhole, partially consumed by the pool and constantly threatened by erosion, is an Ancient Maya Water Temple. This particular cenote, Cara Blanca Pool 1, is one of 25 pools (cenotes and lakes) in the Cara Blanca region. Exploratory diving from the pool and excavations from several of its associated structures suggest the temple was a pilgrimage site for Terminal Classic (A.D. 750–900) Maya. Seeking reprieve from the Terminal Classic droughts, people traveled to Pool 1 to provide offerings to Chaak, the Maya rain deity. This poster presents the preliminary analysis of a sediment core extracted from Pool 1 during the 2015 field season. In order to produce a more localized environmental reconstruction for Pool 1 during the Terminal Classic Period, fossil pollen was extracted from the Pool 1 sediments. The assemblages were then compared to nearby Pool 6 sediment assemblages. This study fills a gap in the environmental history of central Belize while trying to elucidate the relationship between Terminal Classic Maya and Cara Blanca.

Larsen, Clark Spencer [215] see Pilloud, Marin

Larsen, Matthew (Smithsonian Tropical Research Institute)**[295]** *Contemporary Human uses of Forested Watersheds and Riparian Corridors: Hazard Mitigation as an Ecosystem Service, with Examples from Panama, Puerto Rico, and Venezuela*

Humans have long favored settlement along rivers for access to water supply for drinking and agriculture, transport corridors, and food sources. Settlement in or near montane forests include benefits such as food and wood supply, and high quality water resources derived from watersheds where upstream human disturbance and environmental degradation is generally reduced. However, the advantages afforded by these floodplain and montane settings pose episodic risks for communities located there as floods, landslides, and wildfires cause loss of life, and destroy infrastructure and crops. Understanding of flood probability and magnitude as well as hillslope stability by residents in these environments mitigates these risks. Early humans presumably developed a basic understanding through long periods of occupation and environmental observation of rainfall patterns and river discharge. Modern global urbanization, particularly in regions of rapid economic growth, has resulted in much of this "organic" knowledge being lost, as megacities encroach on floodplains and mountain fronts. Moreover, the most likely occupants of these hazardous locations are often economically constrained, increasing their vulnerability. Effective stewardship of river floodplains and upstream montane forests provides a key ecosystem service, which in addition to the well-described services, i.e., water, hydroelectric energy, etc., reduces natural hazard and vulnerability.

Larson, Greger [176] see Linderholm, Anna

Larson, Greger (University of Oxford)**[223]** *Genomic Insights into Long-Term Domestic Animal Translocation*

Animal domestication first began at least 14,000 years ago with the archaeological emergence of domestic dogs. A multitude of other animals followed suit more or less coincident with the origins of settled agriculture in numerous locations independently. The history of human translocations of wild animals dates back to at least 40,000 years ago, and humans were certainly responsible for the appearance of the wild progenitors of domestic animals on islands prior to their domestication. Here, I will present the evidence for human manipulation of wild and domestic animal populations, and demonstrate how new genomic evidence is shaping our perceptions of both the frequency of human-mediated translocation and the role of admixture between domestic and wild populations across the globe. More specifically, I will show how an assessment of modern and ancient DNA can reveal long-term patterns of gene flow in several domestic species and how those patterns mirror the migration pathways and timings of the people with whom they travelled.

Larson, Mary Lou (University of Wyoming) and Marcel Kornfeld (University of Wyoming)**[244]** *Trash or Treasure? A Critical Analysis of Hell Gap Zooarchaeology*

Over the past century, archaeologists have treated faunal remains differentially: either discarding all bones as unimportant, selectively collecting the informative ones, or treasuring all for eternity and future research. Studies at the stratified Paleoindian Hell Gap site in southeastern Wyoming included several of these treatment options. Our presentation investigates the different treatment of bones at Hell Gap over more than 60 years (1960–2015) of site studies. Such treatment is argued to have biased interpretations of zooarchaeological remains, making them problematic in reconstructions of procurement and processing strategies. Recent site investigations (after the mid-1990s) are systematic and explicit in recording and collecting field and lab protocols, enabling us to compare 'complete' collection (1990s and on) with collections that underwent unknown deletional biases (1960s). In this presentation, we compare the overall 1960s and recent faunal assemblages and evaluate the spatial characteristics of faunal remains in several Paleoindian components of the Hell Gap site to begin modeling site structure.

LaSarge, Diana [266] see Neller, Angela

Lash, Samantha [217] see Huang, Yongsong

Lassuy, Mila [182] see Dodrill, Taylor

Latombe, Guillaume [211] see Burke, Ariane

Latorre, Claudio [139] see Capriles, Jose

Lattanzi, Gregory (New Jersey State Museum)**[265]** *The Other 99%: Archaeological Collections, Research, and the New Jersey State Museum*

Since 2001, the Bureau of Archaeology & Ethnography began accepting interns and opened its collections to scholars and professionals conducting research. Numerous undergraduate and graduate students have completed both senior honor theses, M.A.s and Ph.D.s working with the over 2.5 million

objects in our collections. Numerous professionals have utilized the collections for their ongoing research interests. The Bureau itself has had to build this program from the ground up along side these researchers. Additionally, the Bureau has conducted ongoing consultations with Native groups, invited college anthropology classes, carried out International Archaeology Day, and completed many accomplishments. This poster presents some of those highlights along with data generated through research with the collections.

[2] *Discussant*

Lau, Hannah [87] see Proctor, Lucas

Lau, George (Sainsbury Research Unit, UNIV OF EAST ANGLIA)

[105] *The Lives of Mountains: A Cultural Orogeny in Peru's North Highlands*

There is no more palpable or ambivalent a presence in the Andean landscape than that of mountains—distant and harboring, fertile and terrible, rocky and liquid, inviting and impervious. Yet their understanding for Andean groups is only in its infancy, and largely informed by insights from Inka, colonial, and ethnographic studies. This paper focuses on pre-Inka engagements with 'mountains' as nonhuman beings on the landscape, especially around Peru's Cordillera Blanca. I am interested in when and how they are seen to come about, their 'orogeny,' and how they come to hold utmost importance for many groups as social others. Archaeological, linguistic, and iconographic evidence from the region and adjacent areas help to explore three main points. First, mountains (locally, 'jirka') were seen as old, agentive beings. While human in nature/culture, they were profoundly nonhuman in form, materiality, and action. Second, elements of their bodies (feet, orifices, prominences) formed key spatial contexts for human activity and organisation. Finally, dwelling and ritual sought to feed and tap into their reservoirs of potency through a cyclical process—theorised broadly as nurturing generative capacity. The different lines of evidence offer an emerging picture of ancient understandings of mountains and their mediating role for pre-Inka groups.

Laubach, Amber (Eastern Connecticut State University) and Sarah Baires (Eastern Connecticut State University)

[112] *Monumental Construction at Cahokia, a Geoarchaeological Perspective*

Examining precolumbian earthen mounds from both a macro- and micro-scale lens can reveal geotechnical knowledge of construction as well as the cultural significance of this pervasive past practice in the Eastern Woodlands. Micromorphology soil samples provide a rich volume of data to examine fine-grained construction fill composition, pedogenic activity, and the relative rate of monumental construction. These geoarchaeological methods are capable of providing meaningful re-constructions of past practice. In this poster, we examine micromorphological soil samples recovered from two precolumbian non-domestic construction projects from Cahokia Mounds State Historic Site in southern Illinois. These samples were obtained from a ridge-top mortuary mound (Mound 66) and the Rattlesnake Causeway both monumental features dating to Cahokia's formative years (ca. A.D. 1050–1150). Our analysis will examine past construction methods, estimate rate of construction for both the Causeway and the burial mound, and will determine types of deposits utilized in construction. Further, we will utilize these data to understand the broader social significance of mound and causeway construction projects to examine their impact on Cahokia's early years as a burgeoning city.

LaValley, S. Joey (EnviroSystems Management, Inc.)

[113] *Tiptoe the Steptoe: A Report on and Examination of Survey Results from Steptoe Valley and the Schell Creek Range of East-Central Nevada*

This poster reports on results from 25,745 contiguous acres of pedestrian survey in southern Steptoe Valley and the Schell Creek Range of east-central Nevada. An extensive Class III cultural resource inventory conducted in 2014 and 2015 by EnviroSystems Management, Inc., resulted in the recordation of 285 new sites, seven previously documented sites, and 386 isolated artifacts/features. These resources span the entirety of human occupation in the Great Basin. Sites include Paleoindian, Archaic, Late Prehistoric, Fremont, Numic, Protohistoric, and Historic Period artifact scatters. Features observed include pine nut caches, rock foundations, a wickiup, historic corrals, cabins/dugouts, and newly identified areas of historic charcoal production. Additionally, this poster provides an analysis of diachronic shifts in spatial distribution of prehistoric cultural resources, as well as highlights noteworthy aspects of other documented archaeological resources.

Law, Karly, Ben Chiewphasa (University of Montana) and Lorena Craig (University of Montana)

[175] *Phylogenetic Approaches in Examining Western North American Rock Art: The Evolution of the Shield-Bearing Warrior Motif*

The present study examines rock art and its ritual landscapes as the physical remnants of evolving cultural traditions. By incorporating an evolutionary framework in rock art studies, we can determine if rock art traditions evolved via descent with modification versus blending and borrowing of ideas. This project focuses on Fremont and Ceremonial Style shield-bearing warrior motifs associated with ritual contexts and spaces (animal medicine, cosmology, and shamanism). Drawing upon several approaches to phylogenetic analysis, we argue that motifs were evolved more by phylogenesis than ethnogenesis. Signals of descent with modification can best be explained by the continuity of ritual standardization where spatial awareness and certain visions and imagery are expected during vision quests and shamanistic initiations. The shield-bearing warrior may have changed from a motif representative of the individual into a motif more emblematic of broader group identities (i.e., warrior brotherhoods, ethnic or cultural groups, and secret shaman societies).

Law-de-Lauriston, MacLaren [67] see VanPool, Christine

Lawrence, John, Scott Fitzpatrick (University of Oregon) and Kathleen Marsaglia (California State University of Northridge)

[41] *Petrography and Provenance of Pottery Sherds from Islands in the Southern Lesser Antilles, Caribbean*

Native Amerindian groups who inhabited the southern Lesser Antilles of the Caribbean likely used local materials for temper in the manufacturing of pottery, but may have transported pottery once it was produced. To identify potential sources of temper and possible movement of these resources and/or pottery, we conducted petrographic analysis of precolumbian ceramics found on various islands, including Barbados, Mustique, Carriacou, and Union. Each island exhibits distinct geology with sand components that may have been used in the tempering of ceramics. A sample set of 93 sherds was thin sectioned and stained for feldspar identification prior to petrographic analysis. Sherds were categorized by their temper types and representative samples from each type were selected for point counting using the Gazzi-Dickinson method. Sherds from Carriacou exhibit four distinct tempers, Union two, Mustique three and Barbados, which has one distinct temper with two sub-types. Results demonstrate that the Mustique and Barbados temper compositions directly reflect their own island geology, implying local production of temper and pottery. In contrast, Carriacou tempers appear to be imported, possibly from nearby Union Island, due to similar temper compositions of two temper groups.

Lawrence, Ken (SWCA-Texas State University) and Jon Lohse (Coastal Environments, Inc)

[55] *Soil, Climate, and Culture Records on the Southern Great Plains*

This paper compares radiocarbon chronologies for climatic and cultural changes in Texas and the Southern Plains region utilizing multiple sources. A radiocarbon baseline (>100) from select river basins across Texas helps reconstruct the alluvial histories of these catchments. This baseline establishes a framework for understanding aspects of climate change, as alluviation provides a proxy for general cycles of precipitation and aridity. Next, the alluvial-climatic records are supplemented by a dataset of 69 XAD purified AMS-dated bison remains from archaeological contexts in Texas and Oklahoma. This dataset also provides delta 15 N and delta 13 C data that allow direct examination of climatic variability (temperature and precipitation) during sharply defined periods of bison presence. Finally, these climatic trends are compared against three different radiocarbon-based studies of culture change. First, we evaluate (>400) 14C dates from Ft. Hood, Texas. Second, the bison dataset provides a record of cultural change, since samples represent the presence and exploitation of that resource. Third, an earlier study evaluated hundreds of radiocarbon dates and their association with certain key diagnostic point types across Texas. All radiocarbon assays have been recalibrated using the INTCAL09 curve in order to provide a consistent chronological framework.

Lawrence, Michael [120] see Cartagena, Nicaela

Lawres, Nathan (University of Florida - Department of Anthropology) and Matthew Colvin (University of Georgia - Department of Anthropology)

[246] *Gathering Relations in an Aqueous World: Monumentality, Ontology, and the Belle Glade Landscape*

Recent research on precontact South Florida has reinforced the notion that the peoples dwelling in the region inhabited a past material world much different from our own and from neighboring areas. In particular, the hydrologic characteristics of a subtropical landscape centered on the Lake Okeechobee Basin are one of the central features of both the epistemology and ontology reflected in the earliest monumental architecture in the region. Yet these worldviews and worlds were not static entities; rather, much like the rising, falling, and continual flowing of their aqueous world, these ontologies were also in motion, gradually expanding in inclusivity. This research suggests that the monumental architecture of the region is a concretization of an ontology. However, both the monumental practices and the ontology it reflects underwent transformations tied to the experiencing of a landscape undergoing its own transformations. Yet, within these transformations are visible continuities that reference the past through citational practice.

Lazzari, Marisa, Lucas Pereyra Domingorena (CONICET-Museo Etnografico), Maria Cristina Scattolin (CONICET-Museo Etnografico), Wesley Stoner (University of Arkansas) and Michael Glascock (University of Missouri)

[57] *Social Interaction and Communities of Practice in Formative Period NW Argentina: A Multi-Analytical Study of Ceramics*

South-central Andean scholarship has extensively discussed a variety of circulation and exchange practices, with particular emphasis on llama caravan long-distance trade. In NW Argentina, traditional approaches proposed that regional interaction was an increasingly centralized process, based on typological similarities observed in a variety of materials across the region. While material culture styles and traits were undoubtedly shared, the unexamined focus on similarities leaves the mechanisms, direction, and intensity of interaction to speculation. Provenance analyses can shed new light on these ancient relationships, yet focusing on single analytical techniques obscures the nuances of early interaction.

To further contribute to the detection of the intricate relationships supporting ancient networks, we implemented a multi-analytical approach to different classes of artefacts. We focus here on the results of the analysis of 542 pottery sherds from first millennium A.D. sites, as well as clay samples, obtained through petrography, NAA, and targeted LA-ICP-MS.

The results provide a platform to examine close intercommunity links rooted on common craft practices rather than solely on stylistic reconstructions, and to explore the ancient circulation of goods, skills, and people without assuming the capacity of early elites to manipulate and capitalize on such networks.

Lea, Trevor (New Mexico State University), Danielle Soza (New Mexico State University), Candice Disque (New Mexico State University) and Kevin Conti (New Mexico State University)

[67] *Modernizing Empirical Data in Alkali Ridge, Southeastern Utah*

The Alkali Ridge Project conducted by New Mexico State University is a data modernization project geared towards updating maps and providing artifact analysis around the Ten Acres community in the National Historic Landmark Southern District in southeastern Utah. Though much work in this area has been done by our predecessors, additional data is necessary to better understand the community organization. The 2015 field season allowed us to survey four sites, including the Ten Acres site (42SA15206) excavated by Alfred Kidder in 1908, a previously unmapped tower complex site (42SA4998), and two other small satellite sites. As a result of our survey at those four sites, we were able to recognize architectural similarities among them and clearly identified the Ten Acres site, which had multiple story structures and more than 40 kivas, as a community center. Further, there are a great number of medium and small satellite sites surrounding Ten Acres in addition to the ones surveyed. In this poster, we will tackle three major questions: 1) What was the role of the Ten Acres site? 2) Were other satellite sites occupied at the same time? and 3) How did these other sites interact with the Ten Acres community?

Leach, Melinda [37] see Scharf, Elizabeth

Leach, Melinda (University of North Dakota), Elizabeth Scharf (University of North Dakota) and Ann Reed (Iowa State University)

[37] *Capstones and Competency across the Anthropology Major: Assessment of Student Learning with an Archaeological Case Study*

In this poster, we examine ways in which an archaeological case study can usefully serve multiple purposes in the assessment of undergraduate student learning. In the context of our senior capstone course, we have developed a three-tiered assessment plan for examining effective learning outcomes at the course, program and general education ("Essential Studies") levels. The assignment, based on real events and surrounding controversy, asks our capstone students to reflect deeply on ethical issues, community engagement, diversity of perspectives, policy implementation, historic preservation, and archaeological responsibility. Using both direct and indirect assessment tools, we are able to address the following Anthropology program and general education learning goals: awareness of global diversity, holistic and critical thinking about local and global problems, anthropological research design, understanding sources of cultural variation, communication about anthropological theory, and ethics. Data from four years of capstone assessment will be summarized and graphically presented.

Leach, Peter (Department of Anthropology, University of Connecticut)

[249] *Discussant*

Leakey, Louise [269] see Evans, Adrian

Leavitt, Steven [218] see Panyushkina, Irina

Leclerc, Natasha [185] see Burchell, Meghan

LeCount, Lisa (University of Alabama), Kara A. Fulton (University of South Florida), David W. Mixter (Washington University in St. Louis), E. Christian Wells (University of South Florida) and Thomas R. Jamison (Hartgen Archeological Associates, Inc.)

[125] *Activity Area Analysis of Elite and Commoner Spaces in the Ancient Maya City of Actuncan, Belize*

This report describes the results of a geochemical analysis of nearly 1,000 samples from earthen and plaster surfaces at Actuncan, a prehispanic Maya city in western Belize. Studies of the social, political, and economic relationships between elites and commoners demonstrate that the lived experiences of both groups were dramatically different. However, we know little about how social roles and relationships impacted the organization and daily use of domestic and public spaces. Multivariate quantitative modeling and spatial interpolation were used to study large expanses of a Terminal Classic commoner residential area, a Late Classic elite palace complex, and a Terminal Classic civic complex. Data from commoner space shows that residents used both formal patio spaces and the interstices between architectural groups for domestic activities. Research in the palace complex demonstrates that a variety of domestic, ritual, and possibly administrative activities took place therein, a finding that challenges previous assessments of palaces as primarily royal residential compounds. The data also indicate that, after the palace was abandoned in the late eighth century, some of its public functions were displaced to a new, dedicated civic complex where community members gathered to participate in the consummation of a new sociopolitical regime.

Lee, Jinok (University of Texas, Austin)

[130] *Subsistence Ecology in the Making of the Shang State, Eastern China*

This study examines the transition of subsistence practices in early Bronze Age sites in eastern China, when the region was integrated into the Shang state in the second millennium B.C. Through a combination of geomorphological and archaeobotanical analyses, I reconstruct the long-term environmental history as well as land-use practices at the Yueshi cultural sites, to explore a variety of responses and adaptations that would have been developed before and after the Shang expansion into the area. In so doing, I seek to demonstrate that indigenous farmers had sophisticated buffering strategies to ensure a better adaptation to the environmental and social transitions, and that they affected the Shang state formation as active participants, rather than as minor or miscellaneous players.

Lee, Craig [191] see Yu, Pei-Lin

Lee, Lori (Flagler College)

[284] *Nineteenth Century Race, Gender, and Consumerism in Virginia*

This paper uses historical and archaeological evidence to which consumer goods were available to enslaved men and women in nineteenth century Virginia. At the scale of local markets and stores, supply and variable adherence to laws constrained which goods were available to slaves who were able to purchase or trade for them. By comparing purchases of enslaved African Americans with purchases of whites at the same store, I assess which goods were accessible to each group. I use archaeological data to evaluate the relative significance of various goods. Then, I consider what choices among these goods by men and women reveal about needs, desires, opportunities, and risks.

Leentjes, Danyelle [267] see Smith, Lindsey

Lees, William (University of West Florida)

[48] *Discussant*

[260] *Chair*

Lee-Thorp, Julia [76] see Santana Sagredo, Francisca

LeFae, Jones

[20] *Temporal and Spatial Variability of Mortuary Assemblages at Los Guachimontones, Jalisco, Mexico*

Mortuary offerings play an important role in understanding the social structure, status-building mechanisms, trade networks, and ideological symbols and beliefs of ancient cultures throughout Mesoamerica, particularly of less well-understood areas such as west Mexico. Changes in these structures, mechanisms, and networks may be recognized through analysis of mortuary assemblages and treatments. During the 2015 laboratory season, mortuary offerings from the site of Los Guachimontones in the Tequila Valley region of Jalisco, Mexico, were analyzed. In order to investigate changes in craft production of mortuary offerings, I collected data on the number, type, technologies used, and quality of offerings for each excavated burial at the site. Offerings include ceramic vessels, figurines, jewelry, and lithics that exhibit distinctly different styles and technologies between separate locations (e.g., ceremonial vs. habitation), as well as time periods represented. Initial analysis revealed changes in burial offerings and treatment of human remains from the site between the Tequila III (160 B.C.–50 B.C.) and Tequila IV (A.D. 200–500) phases through the El Grillo (A.D. 600–900), and Atemajac II (A.D. 1400–1600) phases that may represent changes in population composition, social structure, or trade networks. This analysis is an important addition to the understanding of precolumbian west Mexican cultures.

LeFebvre, Michelle [7] see Rock, Carolyn

Lefebvre, Karine (CIGA - UNAM)

[20] *Aportación de las fuentes históricas para un avance de la arqueología colonial en México*

En México, los dos primeros siglos de la Colonia española siguen sin considerarse suficientemente en la investigación arqueológica. Los proyectos se enfocan principalmente en estudiar la época prehispánica y posteriormente las haciendas (principalmente después del siglo 18), creando un verdadero hiato de conocimiento de la cultura material y de la arquitectura de los siglos 16 y 17. Además, esta asimetría es todavía más evidente en las zonas rurales. Esa situación se explica tanto por la permanencia de numerosos asentamientos y estructuras agropecuarias en un mismo lugar desde el principio de la colonia (estructuras modernas cubriendo otras más antiguas), como por el carácter efímero de los materiales de construcción. A partir de un estudio llevado a cabo en la región de Acámbaro (Guanajuato, México), veremos como la documentación histórica (escrita y cartográfica) permite avanzar en el conocimiento de la cultura material rural local orientando a la investigación arqueológica. Apoyándose en ejemplos concretos, presentaremos la metodología que relaciona la arqueología y la historia, para entender el patrón de asentamiento colonial, tanto en los pueblos como en las estructuras agropecuarias.

LeFebvre, Michelle (University of Florida and Leiden University)

[222] *Environmental Archaeology in the Caribbean Islands: Multi-disciplinary Approaches to Past Human-Environment Dynamics across Time and Space*

Environmental Archaeology is a diverse field that focuses on the inherent relationships between past people and the physical environments in which they lived. Archaeologists employ traces of past human behavior and cultural practices in their macro-, micro-, geo-, and bio-chemical forms to study past environmental conditions as well as human activities that directly or indirectly involved or impacted the environment. In the Caribbean islands, archaeologists employ a diversity of analytical techniques for the analysis of past environmental signatures and cultural remains. Questions pursued by Caribbean scholars address topics of cultural, ecological, biological, and geological significance, contributing to broader understandings of human ecodynamics in island and coastal settings through time. This presentation reviews traditions and tenets of environmental archaeological scholarship within the Caribbean islands, provides an intellectual context for the symposium papers, and situates Caribbean island-based research within broader topics of environmental archaeology.

[222] *Chair*

Leffler, Paul [287] see Parsell, Veronica

Lehmkuhl, Iva Lee [268] see Reitze, William

Lehner, Joseph (Research Center for Anatolian Civilizations, Koç Univeristy)

[79] *Cooperation, Craft Economy, and Metal Technology during the Bronze and Iron Ages in Central Anatolia*

The role of copper and bronze in the context of the emergence of Bronze and Iron Age states in the Near East is poorly understood due to a relative lack of comprehensive analysis of diachronic archaeometallurgical data. Excavations from Boğazköy and Kerkenes Dağ in central Anatolia have recovered one of the largest, diverse, and stratified corpora of copper objects and metal production debris, spanning the period from the Early Bronze Age, ca. 2300 B.C., until the Late Iron Age, mid-fifth century B.C. Analysis of over 1,100 objects employing energy dispersive X-ray fluorescence (EDXRF), in field portable X-ray fluorescence (pXRF), and select lead isotope analyses using multiple collector inductively coupled plasma mass spectrometry (MC-ICPMS) demonstrate that the rise of political complexity is closely tied to increases in trade and the management of commodity chains. Textual evidence illustrates how the Hittite state in particular managed the mobilization of metal commodities and finished goods as taxes, gifts, and payments for labor. Metal trade is further linked to state finance systems to explain how production and trade are tied to strategies of economic integration and interregional networking in Anatolia and beyond in the Near East and Mediterranean regions.

Lei, Xingshan [173] see Lam, WengCheong

Leight, Megan (CUNY Graduate Center)

[291] *Art Objects Don't Make Themselves! A Consideration of the Ik' Style from the Petén Lakes Region*

Art-making is an essential element of Mesoamerican culture. Asserting the primacy of the art object as a site of inquiry can provide a fascinating framework for organizing, imagining, and interpreting the past. This paper considers art objects produced during the Late Classic (ca. 600–900 C.E.) by the Maya Ik' polity in Petén, Guatemala. The elaborately painted surfaces with naturalistic figures, realistic color schemes, and detailed hieroglyphic inscriptions about artists, patrons, and regional history abound on ceramic vessels. These works function not only as prestige items, but also as textual sources produced by Ik' polity elites. This paper uses recent archaeological discoveries from the Petén Lakes region and contemporary methodologies to consider Ik' polity artistic practices and ideology.

Leitermann, Garrett [267] see Arakawa, Fumiyasu

Leitermann, Garrett (New Mexico State University)

[287] *Improving Public Archaeology through Educational Psychology and Pedagogy*

Public archaeology is the means by which we as archaeologists demonstrate the value of our findings and research to our primary benefactors and supporters, the public. Public archaeology has been an increasingly important field within the realm of archaeology in recent decades with a constant desire and need for establishing new and effective ways of engaging the public and sharing with them the benefits of archaeological work. Recent efforts to improve the outreach programs at the University Museum at Kent Hall of New Mexico State University provides a case study of how archaeology can be taught and its value demonstrated to primary school age students. Whilst generating new ideas for outreach programs, the efforts at the University

Museum have also taken into account the fundamentals of the psychology of teaching and the pedagogy employed at different stages of cognitive development. The subsequent results at the University Museum can demonstrate how being familiar with the fundamentals of educational psychology as well as age appropriate teaching methods can be beneficial to the efforts of archaeologists engaging primary school age students.

Lekson, Stephen (University of Colorado) and Catherine Cameron (University of Colorado)

[53] *Obsidian in the Southwest*

Payson Sheets has often been on the cutting/bleeding edge of obsidian research. We review current obsidian studies in the Southwest, as a proxy for social/economic interaction. We comment on confirmed or tentative sightings of Mexican obsidian in and around the region, also as a proxy for social/economic interaction.

[104] *Discussant*

Lema, Verónica [62] see Jolie, Edward

Lemaitre, Serge [131] see Arsenault, Daniel

Lemke, Ashley (University of Michigan) and John O'Shea (University of Michigan)

[55] *Diving into Environmental Change: Underwater Archaeology of a Holocene Refugium in the Great Lakes*

While many paleoenvironmental methods have achieved extraordinary resolution, regional reconstructions based on these methods are rarely as accurate or as refined as often assumed. Data points are typically few and far between, and are interpolated over a heterogeneous landscape; concealing significant variability. These problems are particularly acute in the Great Lakes region, where fluctuating lake levels and environmental changes during the early Holocene were diverse and punctuated. Recent underwater research on the Alpena-Amberley Ridge (AAR), a submerged land bridge cutting across Lake Huron which was dry land 9,000 years ago, is providing a picture of contemporary variability in paleoenvironments within the Great Lakes. Results indicate that the AAR was a refugium for Pleistocene adapted plants and animals and was vastly different from surrounding mainland. This refugium provided a unique niche for hunter-gatherer exploitation; evidenced by caribou hunting structures and lithic artifacts. The preservation offered underwater has aided chronology building, environmental reconstruction, and archaeological research for a time period poorly known on land. The results emphasize the need to consider the heterogeneous character of local conditions when building regional environmental models. Research on the AAR, therefore, provides valuable insights into the nature of human adaptability to fluctuating and unique environments.

[249] *Discussant*

Lemoine, Luis [220] see Antczak, Andrzej

lemonnier, Eva [96] see Nondédéo, Philippe

Lennon, Mary (AECOM), Thomas Kutys (AECOM, Burlington NJ) and Amy King (AECOM, Burlington NJ)

[36] *Another Pint! Beer & Soda Bottles in Victorian Philadelphia: A Spatial Analysis*

Beer and soda, typical beverages found in the lives of Victorian Americans; the remnants of their proliferate use, a plethora of bottles found at historic archaeological sites across the county. While often overlooked, these bottles, offer the potential to illuminate the landscape of small businesses, domestic residences, and the booming Industrial Revolution. Recent excavations by AECOM, sponsored by PennDOT, within the I-95 corridor of the Kensington neighborhood of Philadelphia have unearthed several nineteenth century glass works, domestic dwellings, and small businesses, along with thousands of beer and soda bottles. This poster analyzes the spatial relationship of these artifacts to each other, their place of manufacture, and point of distribution using R and GIS; resulting in a visualization of the radius of distribution to local bars, taverns, and residences. Through this analysis, we present a broader picture of material culture in nineteenth century Philadelphia, offer conclusions on the patterns presented, and the potential to tighten critical date ranges for archaeological collections.

Lentino, Miguel [100] see Antczak, Konrad

Lentz, David [32] see Sloten, Venicia

Lentz, David (University of Cincinnati)

[162] *Irrigation Systems and Other Forms of Intensive Agriculture at the Ancient Maya City of Tikal*

In addition to an extensive short fallow system and the intensive cultivation of dooryard gardens and orchards that probably produced a major portion of the food supply at Tikal, other forms of primary food production were being utilized, as well. Significantly, the Maya seem to have developed intensive hydraulic agriculture in the lands south of the Perdido Reservoir. Stratigraphic profiles, $\delta^{13}C$ data, and other forms of archaeological evidence clearly indicate that maize was being cultivated directly below the reservoir. Furthermore, it seems plausible that the areas to the southeast of the Corriental Reservoir could have been managed in the same way. Corriental Reservoir had a switching station at the southeast end that could easily have facilitated irrigation of the fields below. The area to the east of the Tikal Reservoir was another likely location where irrigated agriculture might have taken place. With the input of water from the reservoirs, these areas could potentially have been double-cropped, allowing more than one harvest per year. Bajo margins also were likely areas of significant food production. Along with maize, three species of beans, two species of squash, several species of root crops, cotton, and numerous orchard species, including cacao, were actively cultivated.

[96] *Discussant*

Lenz, Brett [114] see Kuntz, Aaron

Leon, Alysia (Southern Illinois University of Carbondale)

[283] *The Enigmatic Structure at Panquilma on the Central Coast of Peru: Site of Funerary Bundle Preparation or Ancestor Cult?*

During the summer of 2015, a puzzling structure was excavated in the cemetery at Panquilma, a major Ychsma settlement on the Peruvian central coast. Upon first glance this structure appeared to have a layout of a household structure but was located near the outskirts of the cemetery, far from the residential center of the site. A wide array of unusual items such as an abundance of metal fragments, colorful bird feathers, orpiment, an arsenic-bearing yellowish mineral used as a pigment, and lithic artifacts as well as Spondylus and Nectandra seed beads were discovered within this building suggesting an important occupation. Was this structure used in the preparation and care of the funerary bundles? Did it house an important figure in both their life and death? Or did it serve as a workshop for preparing ritual items? In an effort to ascertain the significance of this structure, this paper examines the aforementioned remains as well as its relative location and the results from portable X-ray Fluorescence (PXRF) analyses of some of the excavated remains.

Leon Estrada, Xochitl (Universidad Nacional Autónoma de México/Universidad Veracruzana)

[216] *Paisaje Cultural en Los Tuxtlas, Veracruz. Nuevas Perspectivas e Interpretaciones*

En esta ponencia se presentan datos e interpretaciones derivados del Proyecto Arqueológico Paisaje Cultural en Los Tuxtlas Veracruz, llevado a cabo entre el 2013 y el 2015, en el cual se examinaron sitios arqueológicos ubicados en la Sierra de Los Tuxtlas, Veracruz.

La información recabada permitió hacer ajustes en la cronología de la región, un registro detallado de algunos sitios anteriormente analizados y una mayor comprensión de la relación de los asentamientos humanos con el paisaje natural, con lo cual se obtuvieron nuevas perspectivas e interpretaciones de la historia cultural de Los Tuxtlas.

Leonard, Daniel (BCR Consulting LLC) and Jeffrey Vadala (University of Florida)

[270] *The Emergence of Ecological Knowledge in the Ancient Maya Yalahau*

This paper explores how the ancient Maya of the Yalahau region generated and used ecological knowledge of their unique wetland environment in the Preclassic Period. We approach ecological knowledge generation as a process that arises within the context of observable seasonal environmental events and changing and evolving pragmatic goals. Using paleoenvironmental reconstructions, we isolate the key seasonal events that would parametrically structure how environmental capacities could be apprehended and understood for agricultural use. We then analyze how these capacities would have changed within the context of ancient Maya social and ecological tendencies that affect the ecological environment as well as the development of Maya society within the context of these wetland landscapes. When viewed as a dynamic feedback loop, the interplay of environmental and social capacities and tendencies acted to continually shape and transform ecological knowledge in the Yalahau.

Leonardt, Sabrina [94] see Rizzo, Florencia

LEPLONGEON, Alice (University of Cambridge (UK) - McDonald Institute for Archaeological Research), Erella Hovers (Hebrew University of Jerusalem (Israel) - Institut) and David Pleurdeau (Muséum national d'Histoire naturelle (Paris) - UMR)

[22] *Variability in the Middle Stone Age of the Horn of Africa: A Technical Tradition of Southeastern Ethiopia*

The Middle Stone Age (MSA) is traditionally defined by flake, point, and elongated blank production associated with retouched tools (e.g., scrapers and retouched points). However, a great cultural variability is observed, whether it is linked with spatial (e.g., Brandt 1986, Clark 1988), or temporal (Early vs Late MSA, e.g. Douze 2011) variability. Here, we present results from a comparative analysis of the lithic assemblages from Porc-Epic Cave (e.g., Clark and Williamson 1984, Pleurdeau, 2005) and Goda Buticha (Assefa et al. 2014, Leplongeon 2014, Pleurdeau et al. 2014, Tribolo et al. In prep.), both located in southeastern Ethiopia. They have yielded long stratigraphic sequences including Late Pleistocene levels. The results highlight variability at the assemblage level, counterbalanced by similarities between the assemblages, which were interpreted as reflecting the same technical tradition, attributed to the MSA. It is, however, distinct from other MSA industries and represents another example of the lithic variability in the region. Moreover, a mid-Holocene level at Goda Buticha has yielded an assemblage with unexpected MSA-like features, questioning the relevance of the use of this terminology (MSA/LSA) in the region. This high lithic variability during the Late Pleistocene has implications when comparing the Horn of Africa with adjacent regions.

Leppard, Thomas (Rutgers) and Scott Fitzpatrick (University of Oregon)

[262] *A Mentality for Monumentality? Monumental Architecture and Hierarchical Social Organization on Subtropical and Tropical Islands*

The appearance of megaliths, monumental architecture, large-scale earthworks, and sculpture in many prehistoric island societies in the Pacific and Mediterranean is conspicuously absent from the insular Caribbean. From the latte stones, columnar basalt complexes, artificial islands, Yapese stone money, Easter Island moai, marae, and earthworks found across Micronesia and Polynesia to the talayots, taulas, sesi, and Maltese 'temples' of the Mediterranean, small and sometimes remote islands lacking state-level social organization in both contexts seem to have been homes for traditions of megalithic building and monumental display. Why these did not manifest themselves in the Caribbean, a region similar in size to the Mediterranean and surrounded by many continental cases of highly complex and monumentalizing societies? In this paper, we explore insular monumentalism as potentially indicative of patterning in the social organization which necessarily underlies it, and consider why two of the world's major small-island environments—but not a third—might have tended to promote strategies of significant competitive emulation and conspicuous display. In doing so we tentatively focus on demographic trajectories and thresholds in the context of insular resource-poverty and environmental fragility, in conjunction with other factors such as geological composition and distribution.

[296] *Chair*

Leppard, Thomas [296] see Cherry, John

Lerner, Harry (Université Laval)

[214] *Where the Conventional and Unconventional Meet: Marrying Tradition and Innovation in Lithic Use-wear Analysis*

The majority of lithic use-wear research has been geared towards the development of newer more quantitatively precise methods involving evermore sophisticated forms of microscopy. As vital as such efforts are, there is still a place in today's interdisciplinary world for more traditional approaches when coupled with new ideas. This presentation will look at the results of a GIS analysis of experimental use-wear traces from images generated using conventional incident light microscopy. Specifically, the role of intra-raw material type variability in the formation of use-wear accrual patterns on experimental tools made from Yellow Silicified Wood and Morrison Undifferentiated Gray Chert, two of the raw materials used during the Late Archaic of northwestern New Mexico, will be examined.

Lerner, Shereen (Mesa College) and Rachel Most (University of Virginia)

[287] *How Archaeology Informs the Present and Why It Matters for the Future*

Don Henson (2012) wrote "What archaeology has to offer is a powerful contribution to the quality of life of people." He states that quality of life has three critical threads: social inclusion (people), environmental protection (place), sustainable development (future). Despite its popularity, we believe archaeology may be one of the most misunderstood disciplines. It is not about dinosaurs and skeletons or glorifying past achievements. It is an essential scientific discipline because it can teach us how humans adapted to challenges similar to those we encounter in today's world. Climate change, subsistence, overpopulation, natural disasters, political upheaval, and collapse are all part of the human experience and have occurred many times over for thousands of years. Archaeology is one of the few disciplines that can study these issues extended periods of time. In higher education, we see an increase in interdisciplinary studies that include anthropology, sustainability, global studies, gender studies, etc. We must ensure that archaeology does not "get lost" and help students see the importance of connecting the past to the present. To do this, we must make clear the relevance of archaeology.

Lertcharnrit, Thanik [19] see Hanson, Sydney

Lesure, Richard (UCLA), Greg Schachner (UCLA), Kate Bishop (UCLA), Brittany Jackson (UCLA) and Reuven Sinensky (UCLA)

[178] *The Scale of Formative Transitions in the Americas: Inferences Based on the Texture and Timing of Demographic Changes*

This paper examines the large-scale texture and timing of demographic transitions associated with the development of settled agricultural life in the Americas. Based on previous work concerning the Neolithic Demographic Transition (NDT) worldwide, we draw on two sources of published data (skeletal remains and surface survey) to trace Formative-era population growth rates across a huge region, including the U.S. southwest, Mesoamerica, Central America, and the Andes. The goal is to assess the pattern and scale of demographic changes. Do individual regions display similar trajectories but with variable timing, suggesting that they are basically independent of each other? Or, instead, are there large-scale patterns suggesting a role for historical linkages among regions? For instance, do the Andes and Mesoamerica each stand out as internally coherent and distinct from surrounding areas? Is the gradient of adoption of pottery from coastal Ecuador (c. 3500 B.C.) to Mesoamerica (c. 1900 B.C.) associated with or independent of the Neolithic Demographic Transition? Do developments proposed for particular areas—such as the emergence of more productive varieties of maize in Mesoamerica around 1000 B.C.—play detectable roles beyond the area(s) for which they were originally proposed?

Letham, Bryn [132] see Martindale, Andrew

Lethbridge, Emily [261] see Strawhacker, Colleen

Leveillee, Alan [42] see Waller, Joseph

Leventhal, Richard [54] see Diserens, Kasey

Levi, Laura (The University of Texas at San Antonio) and Sarah Boudreaux (The University of Texas at San Antonio)

[27] *Good Neighbors: Investigating Maya Neighborhood Organization in Northern Belize*

Socio-spatial constructs that loosely translate as "neighborhoods" are found within many indigenous Mesoamerican communities. Unfortunately, the phenomenon receives less attention and commentary by observers of contemporary lowland Maya place-making. Nevertheless, archaeologists have long suspected that ancient lowland communities possessed multiple spatial subdivisions; and, at long last, neighborhood archaeology would seem to be a growing focus of research. To date, however, the physical delineation of neighborhoods seldom looks beyond such basic issues as residential proximity and topography. In this paper, we hope to expand research protocols through consideration of an array of supra-household socio-political affiliations that fixed people to specific places within the ancient Maya community. Using data from the sites of San Estevan and Wari Camp (in northeastern and northwestern Belize, respectively), we argue that neighborhoods varied functionally, structurally, and spatially. Not surprisingly, different kinds of neighborhoods produced markedly different kinds of neighbors.

Levin, Maureece (Stanford University), Molly Shelton (University of Oregon) and William Ayres (University of Oregon)

[125] *On Swiddening and Pigs: The Management of Micronesian Agroforests*

Agroforestry, or the growing of tree crops, is a long-standing and key food production practice throughout much of the world. As with all systems of food production, the way that humans manage agroforests has a profound impact on their composition as well as their sustainability. For over 2,000 years, eastern Micronesians have relied largely on tree crop production, vegetable, and fishing for subsistence. In this study, we focus on late prehistoric manipulation of floral environments on the eastern Micronesian high island of Pohnpei, and the ways in which the management of food production systems has shifted with social and historical changes. Specifically, using a combination of macrocharcoal quantification and phytolith analysis, we show that over the past 700 years, Pohnpeians have managed their environments using periodic swiddening, and that the introduction of pigs in the historic period constitutes a notable environmental disruption. We incorporate Pohnpei's ethnographic and historical record as an important component of our interpretation of the paleoethnobotanical assemblage.

Levine, Marc (University of Oklahoma)

[58] *The Making of a Mesoamerican Blockbuster: Maya: Hidden Worlds Revealed*

This paper draws on a case study of the making of Maya: Hidden Worlds Revealed, a "blockbuster" traveling exhibit, to examine issues related to the business, development, and curation of museum exhibits featuring Mesoamerican culture and history. On the business side, museums face challenges in funding exhibits, managing risk, and ensuring return on investment. Development efforts struggle to deliver exhibits in tune with the public's changing tastes without sacrificing institutional goals to present high quality educational experiences that effectively communicate science to the public. Finally, the shift from curator-led to team-oriented curation has led to a host of positive outcomes.

[58] *Chair*

Levy, Janet (UNC at Charlotte)

[60] *Feminism, Gender, and Heterarchy*

When archaeologists, largely led by Carole Crumley, began applying the concept of heterarchy to prehistoric contexts, the focus was on social organization writ large. We generally used heterarchy to debate, illuminate, and/or clarify models of non-egalitarianism, stratification, and hierarchy. The concept seems to have come out of analyses of twentieth century political systems. Some archaeological scholars of heterarchy have diversified into discussions of other aspects of human experience, such as landscape. In the past, I have tried to apply the concept to analysis of symbolism and also to gender. Over time, I have come to understand heterarchy as a potentially feminist concept. Here, I expand on this understanding and provide some brief examples of how heterarchy illuminates our study of gender roles and values in past human social groups. Examples come from western European and southeastern U.S. prehistory.

Levy, Jessica, Luis Alberto Peña, Lucía Valenzuela, Erika Quispe and Teobalda Inés Ramos

[63] *Funerary Bundles from the Storeroom: Conservation Choices and Research Opportunities in Alejandro Pezzia's Salvage Collections.*

Until recently, most textile collections from Peru's Middle Horizon were the product of looting operations. Fine tunics and headdress elements abound in museum collections, but their relationship to a deceased individual and full textile assemblage is unknown. As a result, items classified as "Wari" have been disconnected from the complex social identities and relationships that they once influenced in life, or reconfigured after death. Several mortuary contexts with unknown provenience have been located by the staff of the Museo Regional de Ica "Adolfo Bermúdez Jenkins," product of salvage efforts undertaken by Alejandro Pezzia during the 1960s and 1970s. Two small bundles were documented and received preliminary conservation treatments as part of final projects in the "2015 Practicum in Analysis and Conservation of Organic and Textile Artifacts." Under the direction of instructor Luis Alberto Peña, two Peruvian teams worked on a conservative approach to retain bundle integrity while providing support. We recovered a surprising quantity of information, including site provenience. Features and contextual relationships observed enhance the significance of other museum collections and may be compared to intact tomb contexts documented in more recent archaeological excavations in the central and southern Andes.

Levy, Jessica [63] see Thompson, Katlynn

Lewarch, Dennis (Suquamish Tribe) and Stephanie Trudel (Suquamish Tribe)

[29] *The Suquamish Tribe Approach to Incorporate Tribal Historic Preservation into School Curricula*

The Suquamish Tribe of the Port Madison Indian Reservation in Western Washington promotes incorporation of tribal history, culture, and language into school curricula. Staff members in the Archaeology and Historic Preservation Program participate in curriculum development and make presentations in the North Kitsap School District and at the Suquamish Tribe's own Chief Kitsap Academy Middle and High School. Tribal archaeologists contribute to the classroom experience in a variety of ways to bring to life the rich cultural traditions of the Suquamish People. We summarize efforts to incorporate archaeological and ethnographic data into marine biology, language, and social studies classes through demonstrations of traditional fishing technology, analyses of archaeological shellfish and fish assemblages from shell midden sites, summaries of traditional ecological knowledge related to fishing, hunting, plant gathering, and shellfish gathering, and discussions of traditional place names given by Suquamish elders. Archaeologists also serve as mentors to Chief Kitsap Academy students, providing opportunities for students to explore career paths in tribal historic preservation.

[203] *Discussant*

Lewis, Patrick

[16] *Crossing Boundaries: Lubbock Lake Landmark as a Laboratory for the Study of Vertebrate Evolution*

The unique characteristics of the Lubbock Lake Landmark offer a rare opportunity to ask questions about how vertebrates respond to changes in the environment. In order to address such questions in the fossil record several qualities are required, including a continuous sequence of fossils, reliable dates for the stratigraphic layers, large sample sizes of well preserved and homogenous skeletal elements, and a detailed understanding of the environmental conditions associated with each stratigraphic level. A locality possessing such qualities allows for skeletal anatomy to be placed in environmental context and for hypotheses about the interaction of changing environmental conditions and bone anatomy to be addressed. Dr. Eileen Johnson recognized early that these conditions were present at the Lubbock Lake Landmark and began exploring the impact of the changing conditions at the end of the last ice age on the vertebrates preserved there. She has examined such changes at the level of the fauna, the taxon, and the character. In her work, she has shown how muskrat dentition changed in response to the warming, drying conditions of the Holocene, and how the bison of the southern High Plains decreased body size in response to the changing grasslands.

Lewis, Cecil (University of Oklahoma) and Christina Warinner (University of Oklahoma)

[62] *A Biocultural Assessment of Gene Flow, the Andes and the Himalayas*

Anthropological population geneticists often attempt to explain the pattern and distribution of human genetic variation globally. Central to this pursuit is understanding the degree to which cultural, biological, and geographic variation impact migration of people, and the genetic traits (alleles) they bear. Gene flow, the transfer of alleles from one population to another, flows in the path of least resistance. All other things being equal, this means that topology creates resistance, and we would expect high altitude landscapes to provide barriers to gene flow. But this idealized model is frequently rejected. High altitude environments can also provide incentives for migration and gene flow. Synthesizing our work from the Andes and Himalayas, we discuss the biocultural landscape for the initial migration and the subsequent interaction of ancient peoples. We find there are high-elevation landscapes being peopled as early as there is evidence of people in adjacent lower-elevation regions, and once peopled, patterns of gene flow becomes a complex interplay of cultural and physical adaptation.

Lewis, Patrick [148] see Brown, James

Lewis, Jennifer (Simon Fraser University)

[221] *The Duality of Female Archetypes in Facilitating Fieldwork: Case Studies in Arizona and Jordan*

Polarizing female stereotypes are nothing new: Madonna/whore, "career woman"/"stay at home mum," "girly/tomboy," and others. Though modern feminist movements have opened many doors to removing the limitations applied to these stereotypes, women may still find themselves assuming these roles in order to appear more familiar, less threatening, and more trustworthy in order to facilitate their field work.

My research in both Arizona and Jordan requires that I assume different female roles: demure and passive in Arizona, and open and active in Jordan. These paradoxical positions maximize my access as a researcher in both places and, from my perspective, afford me a more varied skillset with which to undertake my research. This paper presents these apparently disparate roles and examines whether an individual them perpetuates, exploits, or simply recognizes the gender-based realities that researchers employ in their fieldwork.

LHeureux, Gabriela (National Scientific and Technical Research Council (CONICET)), Juan Bautista Belardi (UNPA (Universidad Nacional de la Patagonia Austral) and Flavia Carballo Marina (UNPA (Universidad Nacional de la Patagonia Austral)

[207] *New Data on Hunter Gatherer Coastal Use at the Southern Tip of the Americas during the Late Holocene: Cabo Virgenes 24 (Patagonia, Argentina)*

Cabo Virgenes 24 (CV 24) is an archaeological site located at the southeastern end of continental Patagonia, Argentina. The site rests on an erotional beach which formation started in the Middle Holocene. The archaeological background shows that inland hunter-gatherers populations began to use this coastal space since 2,000 years B.P. The faunal record of CV 24 exposes a low density and high richness of marine and coastal faunal species. There is an emphasis on pinnipeds exploitation (Arctocephalus australis and Otaria flavescens) followed by seabirds (Phalacrocorax sp., Spheniscus magellanicus and Aptenodytes patagonica), and a lesser use of terrestrial mammals like the guanaco (Lama guanicoe). Lithic artifacts were mainly made on locally available raw material (basalt and dacite) and tool types (mostly side scrapers and projectile points) are the ones already registered in the area. An important expedient component that is in accordance to inland guanaco hunters is suggested. In a regional context, the archaeological record of CV 24 reaffirms the observed trends related to the sporadic and marginal use of Cabo Virgenes area by hunter-gatherer inland populations since the Late Holocene until the European contact.

Li, Xiaofei [8] see Smith, April

Li, Yuqi (Washington University in St. Louis) and Xin Wang (Cultural Resource Management Office of Hejing Coun)

[173] *Bronze Age to Early Iron Age Pastoralist Settlements in Xinjiang, China*

The period from the Bronze Age (2500–900 B.C.E.) to Early Iron Age (900–200 B.C.E.) witnessed the emergence and flourish of some massive pastoralist settlements along the Tian-Shan Mountains in Xinjiang, China. Specifically, these large-scale settlements mainly cluster in three regions known as Balikun, Wenquan, and Hejing, located in the eastern, western, and middle Tian-Shan Mountains, respectively. Recent investigation of pastoralist settlement remains in these three regions offers a wealth of information about their ancient residents in terms of economy, material culture, architecture, trade and exchange relationships, and social organization. This paper synthesize current research on these settlements with an emphasis on presenting new survey data from MGK, a large prehistoric settlement in Hejing County, Xinjiang.

Li, Xiuzhen (Emperor Qin Shihuang's Mausoleum Site Museum), Andrew Bevan (Institute of Archaeology, University College Londo), Marcos Martín-Torres (Institute of Archaeology, University College Londo), Yin Xia (Emperor Qin Shihuang's Mausoleum Site Museum, Xi'a) and Kun Zhao (Emperor Qin Shihuang's Mausoleum Site Museum, Xi'a)

[173] *Who Made the China's Terracotta Warriors and How?—Spatial Interpretation on Marking Evidence*

A striking feature of Qin material culture (770–210 B.C.) in ancient China is the frequency with which it preserves stamped, incised, or painted marks with a variety of Chinese characters, numerals, or symbols. In a general sense, such repeated mark-making was an administrative strategy that enabled Qin administrators to mobilise people, raw materials, and finished goods in vast bulk, subject to careful quality and quantity control, and archaeologically, this strategy is nowhere more obvious than in the manufacturing feat constituted by Emperor Qin Shihuang's mausoleum and his Terracotta Army. This study, from a new perspective, considers the production marks associated with both the terracotta warriors and their accompanying bronze weapons. We compare and contrast the marking practices on these two very different kinds of artefacts, devoting close attention to what this implies about workshop organisation or the operational sequences behind their manufacture. We also assess the location of such signs on their parent objects as well as their wider spatial distribution across the pit as a whole, ultimately with a view to understanding craft organisation and project logistics during this crucial early phase of empire-building in China.

Liebmann, Matt [18] see Stack, Adam

Lieske, Rosemary (Vanderbilt University)

[234] *Trade and Tribute Routes among the Spanish and Pipil in Cuscatlan, El Salvador*

In ancient societies political, ideological, and environmental factors played a role in determining settlement patterns and trade routes. The use of GIS-based modeling approaches, such as least cost path analysis, provide us with a greater understanding of how ancient people moved and interacted in the landscape and the possible trade routes that existed among them. In this study, I use network and least cost path analyses to reconstruct the network of trade and communication routes surrounding early sixteenth century Ciudad Vieja. As the first Spanish villa in El Salvador, Ciudad Vieja (1528) was the center of tribute and exchange for 52 known Pipil villages in the Cuscatlán region. Least cost path analysis and other GIS-based techniques help to identify the best possible trade and exchange routes of staple goods and tribute among local settlements. Additionally, it will help us identify villages that served as secondary and tertiary centers of exchange outside of Ciudad Vieja.

Lightfoot, Kent (University of California, Berkeley), Edward Luby (San Francisco State University), Matthew Russell (Environmental Science Associates), Gabriel Sanchez (University of California, Berkeley) and Thomas Wake (UCLA)

[132] *Monumentality in the Hunter-Gatherer-Fisher Landscapes of the Greater San Francisco Bay, California*

This paper examines the construction of impressive mounded landscapes along the greater San Francisco Bay in Late Holocene and Historic times. The authors address some of the theoretical and methodological issues involved in the investigation of extensive accretional shell mound complexes that were built up over multiple centuries. In evaluating questions about how and why these monumental landscapes were constructed, they present recent findings from the study of both large and small sized mounds from a discrete settlement cluster on the east shore of San Francisco Bay.

Lillios, Katina (University of Iowa), Joel D. Irish (Liverpool John Moores University), Anna J. Waterman (Mount Mercy University) and Ana Maria Silva (Department of Life Sciences, University of Coimbra)

[103] *Demographic and Cultural Dynamics of the Portuguese Estremadura in the 4th-3rd Millennia B.C.: A Multi-Proxy Approach*

The cultural dynamics of the Late Neolithic-Copper Age of the Portuguese Estremadura have traditionally been viewed in purely socio-economic terms, involving an increase in social differentiation and economic intensification. In this study, by using analyses of dental morphology and stable and radiogenic isotopes from collective burial populations in the region, we contribute additional lines of evidence to this historical trajectory. In particular, we use this biological evidence to elucidate demographic relationships within and between these late prehistoric communities, including bio-distance and mobility patterns and dietary heterogeneity, and relate these to social practices and environmental constraints.

Lima Astudillo, Isaac [230] see von Nagy, Christopher

Lima Estudillo, Gabriel [230] see Pohl, Mary

Lima Hooen, Alex (Rhodes College), Jon Russ (Rhodes College) and David Dye (University of Memphis)

[6] *Organic Analysis of Residues from Noded Vessels from the Lower Mississippi Valley*

Analysis of organic residues in ceramic vessels obtained from archaeological excavations has the potential to identify the substances Native Americans stored in ceramic pots of various shapes, sizes, and designs. In this study, we analyzed residues extracted from a particular type of vessel that has unique designs covering the outer surface. It was recently proposed that these noded pots were used specifically to process *Datura* for religious ceremonies. *Datura* contains tropane alkaloids that have psychoactive properties that also make the plant dangerous if ingested; thus, the unique markings on the external surfaces indicated that these pots were not to be used for other purposes. Two jars were analyzed non-destructively by ultrasonically extracting the whole pots directly in a methanol:chloroform solvent mixture. The extracts were derivatized using BSFTA with 1 percent TMCS and analyzed using gas chromatography/mass spectrometry (GC/MS) and gas chromatography with flame ionization detection (GC-FID). Standard solutions of the compound atropine, the most abundant alkaloid in many *Datura* species, were analyzed to determine the instrument LOD and MDL. Our results indicate that atropine was below the detection limit but other alkaloids were identified.

Limberg, Caitlin [148] see Brown, James

LIMONDIN-LOZOUET, Nicole [237] see TESTÉ, Marc

Limp, W. Fredrick (University of Arkansas)

[261] *Digital Curation, Data and Replication Of Results—The Foundation for the Future of Archaeology*

The first principle of the SAA's Ethics states "The archaeological record ...[including]... archaeological collections, records and reports, is irreplaceable. It is the responsibility of all archaeologists to work for the long-term conservation and protection of the archaeological record..." As a profession, we've been reasonably responsible as stewards of archaeological sites, but considerably less responsible when we think about digital records and reports. The long-term and ready availability of the complete records of any archaeological activity is essential for the credibility of archaeology. A recent article in *Science* reports that after redoing 100 major psychology experiments only 39 percent could be replicated. The ability of others to reproduce results is a central tenant of modern research. In archaeology, we commonly destroy our object of study—it is only through careful reassessment of the data from our work that we have any hope of a foundation that is not built on shifting sands. At the same time, the increasing use of high density survey and measurement in the field means that we can move from our tradition of recording information—once removed from data—to recording (and preserving) data, making preservation even more critical.

Lin, Kuei-chen (Institute of History and Philology, Academia Sinica)

[106] *The Development of Typology in Chinese Archaeology*

This paper offers an overview of the development of typology in Chinese archaeology. In particular, we focus on how it has influenced and yet distinguished itself from typologies developed in western disciplines—and especially on how Chinese archaeologists have relied largely on objects' appearances to define types. In this manner, they have eagerly used typology in dating and defining archaeological cultures. The philosophy of classification, by which such typologies have been established, has not only in large part determined the way researchers view an object's function, but has also guided their schemes of data collection. Most notably, Chinese archaeologists have used typology as a tool to conjecture about the "kinship" of and evolutionary relationships among archaeological cultures or their affiliations. This analogy to biological classification has crowded out other ways of categorization and presented difficulties, reminiscent of cultural diffusionism. The practice of typology in Chinese archaeology appears to be a supplement to the Chinese idea of history. This has also hidden the fact that types can be constructed in diverse ways, depending on a researcher's purposes, and social groups or relations inferred thereby represent only a single dimension of the cultures we study.

[106] *Chair*

Lin, Yi-Ling

[106] *Bone Craft Product and Economies in the Late Shang Period at Anyang, China*

This paper will discuss recent analysis of worked animal bone discovered at the late Shang Xinanzhuang site, and the manufacture strategies and raw materials manipulations within different locations in Anyang, Henan. Xinanzhuang is considered to be associated with the industrial-scale boneworkshop at Tiesanlu site because of the close proximity between the two sites. Previous studies on bone artifacts from Tiesanlu provide some understanding of craft production systems during the late Shang Period. Applying micro-wear analysis and statistical methods to bone artifacts from Xinanzhuang can provide new data for studying bone cutting strategies among different areas of the workshop and help understand bone craft production and economies during the late Shang Period.

Lindberg, Cathy [165] see Walker, Jeff

Linderholm, Anna (Palaeo-BARN, University of Oxford), Arderm Hulme-Beaman (University of Aberdeen), Allowen Evin (University of Aberdeen), Keith Dobney (University of Aberdeen) and Greger Larson (University of Oxford)

[176] *Deciphering Dog Domestication: A Combined Ancient DNA and Geometric Morphometric Approach*

Research into animal domestication has now broadly established the geographic and temporal origins of the major livestock species, but has failed to do so for dogs. We will apply ancient DNA (aDNA) and geometric morphometric (GM) techniques to archaeological canid remains, of which we have examined ~4000 specimens across the globe through multiple time periods. Using this multifaceted approach, we expect population level distinctions revealed by aDNA analyses to be mirrored by GM analyses. This allows results of one technique to be used as a proxy for the other if both datasets cannot be retrieved from the same specimen. We hope to identify multiple morphological groups from Pleistocene wolves that may represent either natural ecomorphs or early domestication phases. By examining the genetic signature associated with these groups, we hope to identify which group(s) contributed to dogs. Further, by identifying genetic signatures associated with these groups we will identify likely locations for early domestication events. These results will be tested through time by assessing the degree of admixture within each geographical population revealed by the aDNA data. Our results should help reveal the earliest locations of dog domestication and the complexity of modern dog morphological and genetic variability.

Lindley, Tiffany (The University of Texas at San Antonio)

[273] *Maya Non-Elite Hinterland Household Responses to Terminal Classic Transformations*

My research examines the responses of Maya hinterland households to Terminal Classic (A.D. 780–900) socioeconomic transformations. My fieldwork focuses on Floodplain North, one of five settlement clusters in the Rancho San Lorenzo Survey Area in Belize's Mopan Valley. While adjoining settlement clusters have been intensively studied, my excavations are the first at Floodplain North. To date, I have completed 25 test excavations, sampling all of the mounds in the settlement cluster. Preliminary analysis indicates four households were occupied in the Early Postclassic (A.D. 900–1200). This is unusual in the Mopan Valley, as almost no other hinterland communities survived the Terminal Classic collapse. My research examines the resiliency of this settlement cluster in the wake of large-scale sociopolitical transformations. Yaeger (2000) concluded that the San Lorenzo cluster experienced an 85 percent population decrease from the Late-Terminal Classic periods and was abandoned during the Terminal Classic. My excavations demonstrate that some people chose to remain at the adjacent Floodplain North cluster. By examining the Terminal Classic assemblages and topographic locations of households that showed continued occupation into the Postclassic, I suggest residents of Floodplain North, motivated by strategies promoting social stability and resilience, actively chose to remain in the Mopan Valley.

Lindquist, Shayna (University of Vermont)

[216] *The Formative and Classic Period Obsidian of Matacanela*

Obsidian studies are capable of articulating spatial-temporal and economic trends at particular sites with those at regional and interregional scales. Recent obsidian data acquired through stratigraphic excavations at the site of Matacanela, centrally located within the Tuxtla Mountains, reaffirm patterning previously identified through systematic survey and further enable the temporal refinement of lithic technological shifts throughout the settlement's sequence. This paper examines the site's use of obsidian spanning the Formative and Classic periods, and introduces a preliminary framework for understanding Matacanela's role in local, regional, and interregional lithic economic networks that connected Gulf lowland consumers to source regions.

Lindsay, Audrey (Shumla Archaeological Research & Education Center), Carolyn E. Boyd (Shumla Archaeological Research & Education Center), Victoria L. Roberts (Shumla Archaeological Research & Education Center), Jerod L. Roberts (Shumla Archaeological Research & Education Center) and Timothy J. Murphy IV (Shumla Archaeological Research & Education Center)

[131] *Taking a Byte out of Rattlesnake: An Overview of the Rattlesnake Canyon Project*

The Rattlesnake Canyon mural represents one of the most well-preserved and compositionally intricate rock art murals in the Lower Pecos Canyonlands, and perhaps the world. Deposited gravels from a major flood episode in June 2014, however, raised the canyon floor approximately 10 feet, enabling future floods to destroy the fragile panel. The Rattlesnake Canyon Project is an emergency collaborative effort among Texas Tech University, the National Park Service, and Shumla to document this invaluable cultural treasure before it is lost. Documentation and analysis of this mural includes: 3D modeling and other advanced photographic techniques engaging color management, digital field microscopy to examine paint layer stratigraphy, production of graphic databases for the 269 figures comprising the mural, elemental analyses of the pigments using pXRF, and the collection of detailed attribute data for each of the figures. This paper provides a brief overview of the Rattlesnake Canyon Project and sets the stage for subsequent Shumla presentations in this symposium.

Linford, Samantha (The University of Colorado Boulder)

[67] *The Conceptual Metaphor Expanded: A Visual Study of Whole Vessels in the Mesa Verde Region*

Previous research into the conceptual foundations of the Mesa Verde style has found that ceramic imagery is conceptualized as textile designs and is representative of a worldview grounded in container imagery (Ortman 2000). However, these conclusions derive from patterns observable on sherds. In this study, I examine designs on whole vessels using the same framework to determine whether the same worldview of textiles and ceramic imagery is seen in a complete context. Examining design constraints on vessel forms is addressed in a more complete manner using whole vessels. This study serves to highlight the importance of further research building upon the inclusion of scientific research and conceptualization of human behavior in archaeology through material studies such as ceramics.

Link, Karl [224] see Bouwman, Abigail

Lints, Andrew (University of Alberta), John Ives (University of Alberta) and Kristine Fedyniak (Royal Alberta Museum)

[190] *Little Pots, Big Implications: Analysis of Devils Lake Sourisford Ritual Pottery Vessels*

With an estimated temporal range spanning from 900 to 1400 A.D., the Devils Lake Sourisford (DLS) pottery tradition has been viewed as a northern expression of Mississippian cultural influence within the northernmost Great Plains. Owing to the recovery of these vessels in direct association with human remains and the paucity of available vessels for analyses, understanding this phenomenon has posed a complicated challenge for archaeologists. However, advancements in pottery analyses have provided the opportunity to extract data previously unavailable. Submission of a single DLS vessel from Saskatchewan for multiple pottery analyses including carbonized food residues, D-Stretch Rock Art image analysis, high definition photography, and portable XRF scanning has provided incredible insight towards the design, creation, and use of DLS pottery for ritual activities. Combination of these analyses has concluded that this ceremonial item was treated with a red ochre design and that both maize, and wild rice, contributed to the items prepared within the vessel. Further comparison to three more additional ritual vessels resulted in the identification of ritual trends within the DLS tradition.

[190] *Chair*

Lipo, Carl [110] see McElhoes, Jennifer

Lippert, Dorothy (National Museum of Natural History)

[202] *Discussant*

Lippi, Ronald (University of Wisconsin) and Alejandra Gudino (University of Missouri)

[57] *Cultural Implications of Neutron Activation Analysis of Ceramics from Palmitopamba, Ecuador*

The cloud forest site of Palmitopamba in northwestern Ecuador was occupied for centuries by the Yumbos prior to the arrival of Incas around 1500. Instrumental neutron activation analysis has been performed on ceramics we have excavated there and which represent those two groups, on a third pottery complex widely identified in Ecuador as Cosanga or Panzaleo, and on raw clay samples from the vicinity of Palmitopamba. The results of some 140 analyses are presented. These imply that the Inca pottery at the site was locally made by Yumbo artisans but that the Cosanga pottery is intrusive. We expand upon these and other interpretations to address the nature of the Palmitopamba site and the anomalous relationship that existed between the Yumbos and Incas in the final years of the Inca Empire at its northern periphery.

Lippitt, Christopher [64] see Kirk, Scott

Lira-Lopez, Yamile

[216] *Avances y perspectivas de la arqueología del Centro de Veracruz. Región de las Grandes Montañas.*

A pesar de lo escarpado del terreno, entre montañas y valles, se asentaron grupos humanos en distintos periodos cronológicos desde el Preclásico hasta la Colonia. Algunos de esos valles permitieron la comunicación entre los poblados cercanos, otros, entre regiones geográficas más distantes como la Costa del Golfo, el Altiplano Central y la región oaxaqueña, evidenciando presencia o influencia olmeca, teotihuacana, nahua y costeñas, en los sitios hasta ahora conocidos. Por estar en un punto intermedio entre diversas regiones geográficas y culturales debe de ser estudiada con mayor intensidad y profundidad pues la comunicación en tiempos prehispánicos jugó un papel primordial en el comercio e intercambio de bienes e ideas, conquistas, y en general en el desarrollo de las sociedades antiguas. Lo que se conoce hasta el momento es gracias a viajeros, cronistas, inspecciones, rescates del Centro-INAH Veracruz, y a las investigaciones sistemáticas del proyecto Arqueología del valle de Maltrata. Las perspectivas de estudio deben estar encaminadas hacia análisis de la organización social, política, comercial, religiosa más preciso y a proyectos sistemáticos que permitan ampliar el universo actual de estudio.

Liss, Brady (University of California, San Diego) and Thomas Levy (University of California, San Diego)

[199] *Waste Not, Want Not: Exploring the Archaeological Significance of a Copper Production Waste Mound at Khirbat al-Jariya, Faynan, Jordan*

Recent excavations by the Edom Lowlands Regional Archaeology Project at Khirbat al-Jariya (KAJ), an Iron Age (ca. 1200–586 B.C.E.) copper smelting center in Jordan's Faynan region, aimed to explore the site's rich metallurgical history. KAJ is characterized by architectural features and large slag (smelting waste byproduct) mounds visible on the surface, attesting to its significance as a copper production site. These renewed excavations investigated the abundant metallurgical remains by probing into one such slag mound. This small sounding, a 1 x 1 meter sample excavated to bedrock, provided a complete picture of smelting activity over the site's history. Furthermore, excavators collected slag samples from stratigraphically controlled contexts within the probe and other slag mounds. These samples were subsequently subjected to elemental analysis by X-Ray Fluorescence (XRF) to supplement the archaeological record. By combining XRF results with the chronological framework provided by archaeological excavation, it's possible to diachronically compare elemental concentrations within the slag samples. Together, the excavated material and analytical results (here also building on findings from the 2006 excavations) provide the necessary foundations to reconstruct the metallurgical narrative of KAJ. Thus, this paper presents the results of recent field and laboratory work along with their implications concerning copper production at KAJ.

Litschi, Melissa (Southern Illinois University, Carbondale) and Kayeleigh Sharp (Southern Illinois University, Carbondale)

[205] *Portable XRF Analysis of Anthropogenic Soils from the North Coast of Peru: A Comparative Study of Sample Preparation Methods*

The increasing use of portable x-ray fluorescence (pXRF) spectrometers in compositional studies of archaeological materials has led to an ongoing debate over proper use of this equipment, including procedures for sample preparation and homogenization. Due to the diverse nature of archaeological materials, sample preparation methods should be tailored to specific research questions and material types.

This study examines the impacts of different sample preparation methods on pXRF analysis of anthropogenic soils to obtain a multi-elemental characterization of living surfaces for activity-area analysis. Here, we present a comparative analysis of 150 prepared and unprepared soil samples, including floor scrapings and feature contents, from the Songoy-Cojal site complex on the north coast of Peru. Sample preparation includes grinding and sieving (2 mm screen) of the soils to create a homogenized sample. The results of this comparative study will illuminate the strengths and weaknesses of

different sample preparation procedures for future pXRF analysis of soils at this site and elsewhere in the region.

Little, Maran [133] see Colaninno, Carol

Littman, Robert [224] see Silverstein, Jay

Liu, Jiun-Yu (PhD student of the University of Washington)

[106] *Trade Diaspora in Prehistoric Eastern Taiwan*

The origin and expansion of Austronesian, a language group disperses from Easter Island to Madagascar, is a long-term discussed issue in Taiwan and southeast Asia. For the movement of people and materials, the migrationist models have dominated the explanatory frameworks in the south China Sea, a broader area of my proposed research region. In this proposed research the concept of trade diaspora is applied to examine the possibility of frequent bidirectional movement of materials and people between eastern Taiwan and northern Luzon in the Philippines. I hypothesize the bidirectional movement may have persisted for at least a thousand and three hundred years from 2,300 B.P. to 1,000 B.P., and this proposed research is to explore the interaction and bi-directional influences between trade diasporic communities and local host communities in eastern Taiwan and northern Luzon. The primary archaeological materials utilized for this study are the ceramic assemblages, burial practices, and settlement patterns. All the data above will be tested to support the hypothesis that local interactions are more complex and less unidirectional than previous studies have reported and will test the trade diasporic model as a suitable framework to examine human interaction and its influence to society in eastern Taiwan.

Liu, Haiwang [120] see Storozum, Michael

Liu, Chin-hsin (California State University Northridge)

[252] *Environmental Fluctuation in Neolithic Coastal Central Thailand: A Human Story*

As a continuously occupied Neolithic (~2,000–1,500 B.C.) site in coastal central Thailand, Khok Phanom Di yielded abundant artifacts and biological remains providing detailed insights to its environmental patterns and human biology. Core studies and faunal diversity analyses suggested the existence of an episode of receding coastal margin between 1,750 and 1,650 B.C., exposing marsh and freshwater areas that were previously inaccessible. The transition from a marine/estuarine site to a lacustrine-based environment was associated with a suite of technical and demographic changes that shaped our understanding of human history in southeast Asia. This study investigates how human diet was impacted by the environmental fluctuation, using carbon and nitrogen stable isotope signals from bone collagen. Valid data from 26 skeletal individuals demonstrate that for those buried during the lacustrine period, a change of protein sources from mainly marine-based to a wider spectrum terrestrial-marine mix is evident while no marked change occurred to the marine protein sources. This pattern is attributable to easier access to the interior terrestrial resources during the lacustrine phase and the continuous exploitation of near-shore shellfish throughout the occupation. The isotopic data are placed in the osteological and archaeological contexts to articulate a nuanced lifeway of the people.

Livesay, Alison (University of Oklahoma)

[289] *Stone and Bone: Examining Social Memory through Continuity and Discontinuity in the Mimbres Region*

Groups in the past used social memory for various social negotiations, which can include maintaining and legitimizing power, access to resources, and monumental construction. But how is memory maintained, created, or recreated in the daily practices of a group or groups going through social and material transitions? How does that translate to real social power? In this spirit, I explore the creation, inscription, and possible contestation of social memory in the Mimbres region of southwest New Mexico using the mortuary, domestic, and ritual architecture, and ceramic practices from a number of sites. I examine these material classes in regards to the relative continuity or discontinuity of the then present to the past during the dynamic period known as the Pithouse to Pueblo Transition (A.D. 900–1050). This comprehensive study adds to the recent discussion of the social landscape and corporate group influence in a cultural region that does not demonstrate vertical hierarchy in the burial record.

Livingood, Patrick (University of Oklahoma)

[39] *GIS Dataset for Making Better and More Attractive Maps of U.S. Rivers*

Waterways are one of the most common elements of archaeological maps. However, most GIS layers of waterways contain either too many or too few features at a given scale and don't have any associated data for efficiently including or excluding features. Further, most commonly available rivers datasets contain modern features such as manmade lakes, which are anachronistic for premodern maps. A little known but freely available dataset known as NHDPlus makes it possible to create better archaeological basemaps and this author has created an easy to use distillation of these data specifically for easy use in premodern map making.

Livingood, Patrick [69] see Eiselt, B. Sunday

Llamas, Bastien (University of Adelaide), Alan Cooper (University of Adelaide) and Wolfgang Haak (University of Adelaide and Max Planck Institute for)

[276] *Ancient Mitochondrial DNA Provides High-Resolution Timescale of the Peopling of the Americas*

Archaeological evidence indicates human presence as far as southern Chile and Argentina by 14.6-14.0 kya (thousand years ago), shortly after the Pleistocene ice sheets blocking access from eastern Beringia began to retreat. Genetic estimates of the timing and route of entry have been constrained by the lack of suitable calibration points and low genetic diversity of Native Americans. We sequenced 92 whole mitochondrial genomes from precolumbian South American skeletons dating from 8.6-0.5 kya, allowing a detailed, temporally calibrated reconstruction of the peopling of the Americas. The data suggest a small population entered the Americas via a coastal route around 16 kya, having been isolated in eastern Beringia for ~3-10 ky after separation from eastern Siberian populations. Following a rapid movement throughout the Americas, limited gene flow in South America resulted in marked phylogeographic structure, which persisted through time. Finally, European colonization caused a high extinction rate of precolumbian lineages, with all the ancient haplotypes detected in this study being absent from modern datasets.

[276] Chair

Llobera, Marcos

[174] Discussant

Lloyd-Smith, Lindsay [295] see Krigbaum, John

LoBiondo, Matthew [284] see Lobiondo, Matthew

Lobiondo, Matthew (Monmouth University), John Dysart (Kerns CRM Consultants), Matthew LoBiondo (Monmouth University) and Richard Veit (Monmouth University)

[284] *Reexamining the Dating and Importance of Pipe stems at the Clark-Watson Site in Perth Amboy, New Jersey*

Pipe stems are a staple in Historical Archaeology. Their study can provide considerable insight into the lives of the people who used them. In addition to the cultural importance of pipe stems, these artifacts are frequently used to date historic sites. Working with a collection of over 2,000, seventeenth and eighteenth century pipe stems from the Clark-Watson site in Perth Amboy, New Jersey, we reexamine the notion of a communal tavern pipe through experimental archaeology techniques. In addition, we will compare multiple accepted pipe stem dating methods, while also testing new methods, in an attempt to provide significantly more accurate dates that will aid in the interpretation of future archaeological test

Lobo, Jose

[171] Discussant

Locascio, William (Florida Gulf Coast University) and Sarah Taylor (University of South Florida)

[6] *Exploring the Social Affects of Hurricane Recovery in Colonial St. Augustine*

Data gathered during two seasons of excavation of a Minorcan household in St. Augustine, FL, are examined for patterns that reflect how recovery from the hurricane that hit the city on October 5, 1811, affected social systems and relations within the city's communities. Johnson (2005) has argued that recovery from the disaster created strong bonds among members of the communities and acted to level social inequality within them. Schwartz (2005), however, notes that during the colonial period post-disaster relief in the Caribbean islands increased social inequality, in part because decisions about who got what tended to favor certain groups over others. We consider these models in our investigation of remains of the Pablo Sabate household and historical information on colonial St. Augustine to determine if our data can contribute to broader understanding of how response to disasters is organized and affects communities at the local level.

Lock, Gary [60] see Ralston, Ian

Lock, Gary

[174] Discussant

Locker, Angelina (The University of Texas at Austin) and Fred Valdez, Jr. (The University of Texas at Austin)

[130] *Late Classic to Terminal Classic Maya Transitions: Modeling from NW Belize*

The Late Classic (A.D. 600–800) to Terminal Classic (A.D. 800–900) of NW Belize reveals a change in material culture, settlements, and social-political manifestations. Detailed here are some of the changes observed for the transition from the Late Classic to the Terminal Classic. Changes in material culture are described as are apparent choices in settlement locales between the two temporal phases. The interplay between material culture, settlements, and social-political organization are posited given available data and analysis. The prospect of utilizing other scientific (archaeometry) techniques are suggested as mechanisms for better defining the nature of temporal transitions as reflected in choices of material culture, settlements, etc. A model for explaining the changes and difference between the Late Classic and Terminal Classic Maya is presented as a testable hypothesis.

Lockhart, Jami J. [225] see Mitchem, Jeffrey

Lofaro, Ellen (University of Florida), Jorge Luis Soto Maguino (Dirección Desconcentrada de Cultura de Ayacucho) and John Krigbaum (University of Florida)

[134] *Lamb of God: Caprine use in a Jesuit Church in Early Colonial Ayacucho, Peru*

Known as La Iglesia de la Compañía de Jesus de Huamanga, the earliest Jesuit church in Ayacucho, Peru, was built in 1605 directly off the main plaza. While famous for its baroque art, this standing church with a practicing congregation is in need of extensive renovations. As one of the first steps in a planned future restoration project, archaeological salvage was conducted in 2008, and uncovered human and faunal remains underneath the church floor, which were associated with various ceramic, glass, metal, and leather artifacts. This presentation explores the significance of the faunal assemblage recovered from the church and church grounds, including the animal remains associated with human burials, as well as the faunal remains from the church storage areas. Faunal distribution and context is reviewed and isotopic data presented for the assemblage and is placed in context. For example, carbon and nitrogen isotope values will inform aspects of diet and provisioning, while strontium and lead isotope ratios will inform faunal mobility. Findings will be comparatively evaluated with corresponding faunal data from early historic Peru.

Loffler, German

[255] *This Concoction Is Hot, But My Hand Is Not!: A Possible Function of Annular Rings on P'uku-Like Vessels in the Central Coast of Peru during the Late Intermediate Period and a Conjectural Link to Andean Traditional Medicine*

In this paper, I explore the possible function of the annular rings on p'uku-like ceramic vessels from the central coast of Peru during the Late Intermediate Period. I argue that this part of the vessel is not decorative as others have suggested for modern contexts. Instead, I hypothesize that the annular ring at the bottom of the p'uku-like vessel's function was to buffer the hand from heat. Alternatively, the annular ring might have aided in adding stability to standing vessels in shaky grounds—the central coast of Peru is prone to frequent seismic activity. I develop a methodology to test such scenarios and test it on replicated p'uku-like vessels. Tests confirm that the annular ring efficiently prevents the consumer from burning their hands while holding a hot-content vessel. Also, to a lesser degree, the annular ring aid the vessel from spilling over when free standing. Possible hot-content for the vessels include (a) medicinal remedies, (b) hot foods, and/or (c) hot beverages—these possibilities however, at the moment, are conjecture; they remain to be demonstrated by residue analysis of the vessels themselves.

[255] *Chair*

Loftis, Kathy, Alex Cherkinsky (Center for Applied Isotope Studies) and Robert Speakman (Center for Applied Isotope Studies)

[39] *Assessing the Effectiveness of XAD-2 Resin as Pre-Treatment Method for AMS 14C Dating*

The ability to generate accurate and reliable radiocarbon dates for bone is of great importance in archaeology. Radiocarbon measurements are routinely performed on hydrolyzed bone extract, which may contain exogenous organic matter. The presence of exogenous organic matter may then affect the accuracy of the estimated radiocarbon dates. Several pre-treatment methods have been previously developed to minimize contamination from exogenous sources of organic carbon. Here, we assess the effectiveness of one of these methods, the chemical purification of collagen by XAD resin.

Logan, Amanda [177] see Stahl, Ann

Logan, Amanda (Northwestern University)

[177] *Chair*

Loger, Michele (Cardno/UF)

[164] *Searching for Shell Mounds in Southwest Florida: An Automated Approach*

This paper will explore using automated Object Based Image Analysis (OBIA) to search for archaeological shell mound sites in thick mangrove forest. This is accomplished by combining available data from multiple remote sensing sources, integrating them using several software programs, and training the computer to search for a particular set of parameters—including height (LIDAR) and spectral qualities (Color Near-infrared). The newest software programs will be reviewed, as well as the source and quality of remote sensing data. The challenges, achievements, and pitfalls of the methods employed will be discussed. In addition, the effectivity of the automated process will be compared to manual identification of possible site locations based on ground-truthed data.

Lohr, Christian [95] see Gronenborn, Detlef

Lohse, Jon (Coastal Environments, Inc.)

[55] *Preceramic Mesoamerica: Chronology, Culture, and Climate*

Recent and ongoing investigations in Mesoamerica are showing how different regions followed different developmental trajectories leading up to the adoption of ceramic technologies and sedentary lifestyles. This threshold, which typically defines the end of the Archaic Period, was reached at different points in time anywhere between about 1800 and 900 B.C. These multiple preceramic adaptations seemingly imply that Mesoamerican cultural diversity that marks Formative and later periods had its basis in Archaic and perhaps even Paleoindian periods. This study provides an overview of Mesoamerican preceramic periods, based on an evaluation of available radiocarbon records, and compares these records against available late Quaternary environmental and climate data. We evaluate the timing and nature of preceramic culture change, and consider whether significant environmental factors or events can be recognized that may have accounted for punctuated preceramic responses, either across Mesoamerica or specific to particular regions.

[55] *Chair*

Lohse, Jon [55] see Lawrence, Ken

Long, Shelbi [112] see Nolan, Kevin

Lonneville, Britt [121] see Verlee, Jotka

Lonneville, Britt (Ghent University), Cornelis Stal (Ghent University), Edy Barrios (CUDEP – USAC), Antolin Velasquez Lopez (Universidad de San Carlos de Guatemala) and Philippe De Maeyer (Ghent University)

[212] *Ranking Estimation of Maya Archaeological Sites using Topographic Parameters*

The position of an archaeological site in a transport network is a critical parameter for its prosperity. Large collections of alien relics were excavated on various sites of the Copán region, indicating the importance of inter-site relations and trading. The importance of a particular site accordingly influenced the political, social, and religious life of its surrounding sites. In order to evaluate the theoretical rate of prosperity in comparison with other sites in a region, a reconstruction of the transport routes is required. In this study, a series of candidate routes between sites are estimated using topographic parameters. The resulting routes are ranked based on their potential use, implicitly qualifying the nodes within the network and thus the prosperity of archaeological sites. It is assumed that the routes are the result of an iterative process where the final routes represent the most optimal path between sites, and that most transport took place by canoe or by hiking. The track estimation is therefore based on the anisotropic analysis of a digital elevation model and compared with a slope-based least cost algorithm.

Looper, Matthew [272] see Munson, Jessica

Lopez, Patricio [139] see Loyola, Rodrigo

Lopez, Jose (Universidad de la República, Uruguay)

[263] *Where Does the Amazon End?*

Manuals of American prehistory divided South America into bio geographical zones associated with archaeological traditions, and classify the basin of the Río de la Plata as one marginal area of others with a more defined cultural profile. Systematic research and multidisciplinary projects have discussed the boundaries of those units of archaeological and cultural analysis, as well as theoretical principles which held it.

The basin of the Río de la Plata was associated with the "Pampa" cultural tradition, by environmental similarities and in the hunter-gatherer mode of production. However, the study of mounds called "Indians cerritos" forced to discuss some paradigms, such as the "pampean filiation" of lowland hunters. The prehistory of the Paraná and Uruguay rivers shows similarities with the Amazonian populations, and episodes of dispersion of Arawak and Tupi Guaraní populations are well documented. The lowlands of the East of Uruguay and southern Brazil constitute a unique setting for the comparative study of key aspects, as anthropogenic structures on Earth and its ecological, economic, and social implications.

Rivers, river basins, and aquatic environments articulated a sphere of social interaction of long distance to the interior of the continent, crossing traditional archaeological classification based in cultural eco types.

López, Andrea (Universidad San Francisco de Quito) and Florencio Delgado Espinoza (Universidad San Francisco de Quito)

[282] *Contributions to Understanding Demography and Settlement Patterns in the Valle del Quimi, Zamora-Chinchipe Province, Ecuador*

Carvajal's descriptions of the Upper Amazonian populations created controversies, given that little evidence was presented until recently, by the archaeologists about the demography of the area. Only few studies in the Upper Amazonia region have contributed with data for the reconstruction of local demography, given that most of the work has been enforced as contract archeology projects within the oil and mining industry, with specific questions on mine and lack of regional scope. In the Valle del Quimi, a contract archeology project within the Mirador mining development has taken place since 2004. At this moment, we have gathered sufficient data to reconstruct local settlement patterns and demography. Thus, in this paper, we present a regional analysis of demography and settlement patterns of the Valle del Quimi, and the adjacent Zamora Valley.

López Bravo, Roberto [88] see Paris, Elizabeth

López Campeny, Sara [62] see Jolie, Edward

Lopez Corral, Aurelio [86] see Alcantara, Keitlyn

Lopez Corral, Aurelio (Instituto Nacional de Antropología e Historia), Mari Carmen Serra Puche (Universidad Nacional Autónoma de México) and Gabriel Vicencio Castellanos (Universidad de las Américas, Puebla)

[179] *Changes In Obsidian Supply during the Classic to Postclassic Transition in Prehispanic Puebla-Tlaxcala*

The Puebla-Tlaxcala region witnessed several shifts in political and economic power during the Classic to Postclassic transition. This area played a pivotal role in the development of cultural complexity following the demographic rearrangements that followed the fall of Teotihuacan as a pan-regional state power. However, little research has been carried on understanding shifts in exchange networks, especially on the trade of obsidian materials. Using XRF-p analysis, this paper seeks to provide new data on the economy of obsidian trade from the sites Xochitecatl-Cacaxtla, Cholula, Metepec, and Tepeticpac. Here, we analyze shifts in obsidian procurement exchange webs and the implication on key resource access and control among local state entities.

López Corral, Aurelio [179] see Serra Puche, Mari Carmen

López Mestas Camberos, Martha Lorenza [101] see Mountjoy, Joseph

López Rodríguez, Raquel [32] see Fowler, William

Lopez Varela, Sandra (UNAM)

[10] *Alternative Mexico: A Mobile Application to Preserve Contemporary Heritage Values*

"Alternative Mexico" is a mobile application drawing from the need to preserve and promote contemporary heritage resources that are of great value to its citizens. After more than a century of infrastructure building and promotion of urban lifeways to become a modern country, the experience has resulted in the appropriation of modern spaces and behaviors by Mexico's citizens, with the inevitable creation of new heritage values. These new heritage resources oppose the national definition of cultural heritage and are the main the main source of conflict during infrastructure planning and building. Since modern resources are preserved mostly within the aesthetics of Mexican nationalism, federal institutions hardly intervene to preserve these alternative views of what heritage means to society. "Alternative Mexico" records people's contemporary heritage values, hoping to play an important role in articulating the need for effective, sustainable and responsive preservation models contemplating all forms of heritage, creating a more agreeable partnership between Mexico's citizens and institutions.

Lopez-Hurtado, Enrique (IEP Instituto de Estudios Peruanos)

[283] Chair

López-Hurtado, Enrique [283] see Wang, Qiang

Lopiparo, Jeanne (Rhodes College)

[179] *Making and Breaking: Domestic Craft Production, Fragmentation, and Enchainment at Classic Period Chinikihá, Mexico and Currusté, Honduras*

This paper examines the role of domestic craft production and the fragmentation and interment of locally made goods in the reproduction of social identities and networks of social relations at two Late to Terminal Classic (600–900 A.D.) sites, Chinikihá in the Western Maya Lowlands of Chiapas, Mexico and Currusté in the Ulúa Valley, Honduras. The life histories of the products of small-scale, household-based industries were intimately tied to the life histories of their producers, enchainment the living to the dead through mortuary practices in which fragments of those products were interred with their makers.

Lordkipanidze, David [87] see Coil, Reed

Loren, Diana (Peabody Museum, Harvard University)

[18] *Sound, Health, and Spirituality in the Colonial Lower Mississippi Valley*

Wellness and spirituality are rooted in the body. Bodies and material culture are intertwined through practices of healing; ways to navigate bodily and spiritual health in daily life. In colonial Lower Mississippi Valley, European-introduced diseases and new forms of material culture greatly impacted Native American communities and their practices of healing. Some of these stories are familiar to us: the changes brought about by access to new materials, new tools, and new kinds of clothing. Yet, during this period of stress, how were new and familiar forms of material culture used by those seeking relief and providing care? In particular, how was spirituality expressed in healing practices that was so closely tied to sound, movement, and performance? Here, I consider how bells, beads, and other items of adornment were worn on the body in embodied practices related to health and well-being.

[51] *Discussant*

[18] Chair

Lorenz, Samantha [294] see Saldana, Melanie

Lorenz, Samantha, Naomi Marks (Lawrence Livermore National Laboratory) and James Brady (California State University, Los Angeles)

[294] *Geographic Origins of Child Sacrifices: Radiogenic Strontium Isotope Analyses from Midnight Terror Cave, Belize*

Midnight Terror Cave, located in the Cayo district in Belize, has produced the largest skeletal assemblage reported from a Maya cave. Large-scale modification of the cave for public gatherings indicates that the space was used ritualistically; most of the individuals recovered are believed to be human sacrifices. The assemblage size permitted us to select a relatively large sample of permanent lower first molars from juveniles for radiogenic strontium isotope analyses. Juveniles were the only age subset tested in order to have a sample large enough to draw conclusions about the geographic origins of these individuals. Strontium isotope ratios ($^{87}\text{Sr}/^{86}\text{Sr}$) were measured by thermal ionization mass spectrometry (ThermoFisher Triton TIMS) at Lawrence Livermore National Laboratory. Tooth enamel samples were analyzed along with samples of bone from local fauna and soil samples collected from within the cave. Strontium isotopic ratios of the tooth enamel samples ranged from 0.707929 to 0.709296 ± 0.000030 . These values are consistent with the range of variation in the northern and southern lowlands of the Maya region observed by Hodell et al., 2004. Future work will test adult males and females as well as infants to determine if recruitment practices differed by age and sex.

Lothrop, Jonathan (New York State Museum) and Arthur Spiess (Maine Historic Preservation Commission)

[218] *The New England-Maritimes: Environments and Human Lifeways from the Late Pleistocene into Early Holocene*

The New England-Maritimes (NEM) region in northeastern North America is noted for clear environmental signals of the Younger Dryas climatic reversal (circa 12,900–11,600 Cal B.P.), followed by an abrupt transition to a warmer and more dry early Holocene climate. In this paper, we first review evidence for changes in paleoenvironments and animal populations that accompanied these climatic transitions in the NEM. We then examine archaeological evidence for early human occupations in the region, focusing on (1) variation in settlement and technology, (2) the timing of changes in these phenomena, and (3) possible links with climatic and environmental shifts from the late Pleistocene into the early Holocene.

Loubser, Johannes (Stratum Unlimited, LLC)

[175] *Betwixt and Between: Petroglyph Boulders on Liminal Locations in the Southeastern Mountains*

As far as can be ascertained, all documented petroglyph boulders in northern Georgia and western North Carolina occur next to old Indian overland trails or certain river corridors, specifically at transition points on the landscape. Moreover, these transition points occur between sites with mounds and town houses at one end and certain mountain tops at the other. Whereas a few Cherokee accounts explicitly mention petroglyph boulders at such locales, the placement of some others can be inferred indirectly by comparing locations with traditional accounts. Based on interpretations of documented Cherokee accounts and re-occurring pecked depictions on the boulders, it is proposed that petroglyphs at transition points refer to certain transitional junctures in Indian's lives.

Loucks, Jordon (University at Albany)

[90] *Drive the Spike and Dig the Ditch: Ethnicity, Racism, and the Economic Development of New York State*

This study aims to evaluate the efficacy of archaeological study in the identification of ethnic boundaries in nineteenth-century contexts along the railroads and canals of New York State. The connections between ethnic boundaries, imposed racialized groups, and economic status have been discussed at length in archaeology. By illustrating the economic development of the state using ArcGIS, the regional growth of access to market and class separation can be linked to the development of racist attitudes and ethnic divisions visually. The ultimate goal of this project is to generate a map to diachronically illustrate the possibility for archaeological study to produce data that reasonably shows economic and social difference to support ethnic identification if it at

all possible. The model produced by this project should contribute to discussions on ethnic identification and the archaeology of racism by providing a base layer of possibility of archaeological difference between supposed ethnic groups in rural contexts across the state.

Loughlin, Michael [264] see Pool, Christopher

Louise, Purdue [96] see Cyril, Castanet

Love, Sarah (Georgia State University)

[140] *A Cross Comparison in 3D Modeling: The Potential for a Multidisciplinary Approach to Digital Collections*

Previous research on the 3D digitization of fossil cast collections using photogrammetric reconstruction has indicated that a negligible margin of error exists when comparing 3D digital measurements to those obtained by precision instruments. The ability to collect both quantitative and qualitative data using low cost, time efficient digitization methods presents multiple possibilities for digital curation and open-source data access in addition to mitigating potential risks to the archaeological record. Successful digitization and accurate measurement of prior collections provides additional opportunities to expand these methods and test the applicability to other archaeological materials and historic structures. By performing a cross comparison of a variety of materials and structures, this paper expands prior research to determine the potential for accurate 3D measurement of various cultural resources when compared to their associated methods of physical measurement. Using digital measurement methods, in case studies where a similar negligible margin of error exists when compared to precision instrument measurements, there is significant potential for the creation of multidisciplinary digital databases accessible to a wide array of researchers.

Loven, Jeremy (Eastern New Mexico University) and Kye Miller (PaleoWest Archaeology)

[239] *Understanding Depositional Processes: A Contextual Analysis of Lagomorph Remains from Aztec and Salmon Ruins*

On numerous projects, faunal analysts have speculated to the amount of rabbit (Lagomorph) remains deposited by human-related processes. Previous studies have failed to fully investigate potential differences in the treatment of Lagomorph remains between cultural and natural deposits. This project investigates evidence of human processing of Lagomorph remains from two Pueblo II/III Great Houses in the Middle San Juan region of northwestern New Mexico: Aztec and Salmon Ruins. The primary research question of the project is: "Does a noticeable and significant difference exist in the presence and condition of rabbit remains between natural and cultural deposits in large Pueblo II/III Great Houses?" Aztec and Salmon Ruins provide an appropriate medium to test the current research question because of the depositional histories of the sites.

Lovett, Bobbie [31] see Pozorski, Shelia

Lovis, William [30] see Steponaitis, Vincas

Lowe, John (Texas Parks and Wildlife)

[71] *Discussant*

Lowery, Darrin

[21] *Are We Looking to Discover the First Americans or the First Successful Americans?*

With respect to the peopling of the New World, recent research has focused on linking genetics with the archaeological record. Given historical analogies, there were probably multiple accidental or intentional settlement attempts or migrations into the Americas, which ultimately failed. These failures would have left an archaeological record, but no "legacy" genetic signature among the successful New World settlers. The lecture will address this issue based on recent research at several possible archaeological sites in the Chesapeake Bay region.

Lowman, Christopher

[251] *Old Lumber is Missing: Artifacts from Stanford's Chinese Communities*

As development in Silicon Valley fills what appears to be empty land, it is crucial to question how land became "empty." In the absence of memorials, other physical traces must be considered as legacies. This is the case with the Chinese employees who lived and worked at what became Stanford University, itself made possible by Chinese workers on the Transcontinental Railroad. Living on the campus at the turn of the twentieth century, the Chinese employees impacted the development of agriculture, horticulture, and infrastructure, from growing and selling crops to the construction of roads and buildings and the creation of businesses that lasted many decades. Following their departure from campus, the houses where they lived were abruptly torn down and the sites abandoned. However, the landscape itself is not unmarked: traces are visible through a combination of landscape analysis, examination of artifacts, and archival documents. These physical traces as reminders of the Chinese diaspora and the lives of the people who experienced it and their presence and influence on the landscape.

Lowry, Sarah [8] see Gale, Sara

Loyola, Rodrigo, Isabel Cartajena (Departamento Antropología, Universidad de Chile), Lautaro Nuñez (IIAM, Universidad Católica del Norte), Carlos Aschero (CONICET, Instituto de Arqueología y Museo (IAM), F) and Patricio Lopez (Departamento Antropología, Universidad de Chile)
[139] *Lithic Technology and the use of Space during the Late Pleistocene-Early Holocene Transition in Imilac and Punta Negra Basins, Atacama Desert (24,5°S)*

Despite its extreme aridity, the Atacama Desert (18-25°S) was not a biogeographical barrier during the period concerned with the early peopling of the area and of other regions in South America (12.6 ka). The Imilac and Punta Negra (24°S) high altitude basins, located in the Precordillera of the Andes (3,000 masl), are among the few micro-regions of the Atacama Desert which were continually occupied during the Late Pleistocene to Early Holocene transition

(12.6-10.2 ka). Results from the analyses of lithic assemblages recovered from archaeological sites and from raw material sources, are considered to support an early colonization model mainly centered on the procurement, transport, and technical management of lithic resources. Other lines of evidence such as isotopic, spatial (GIS), and water salinity analyses were also considered. Changes in technological strategies, mobility, and settlements were identified and discussed in frame of different human occupations phases. A cumulative process of landscape and resource distribution learning can be considered as key-factor in the changes observed in technology and spatial organization.

Lozada, Maria (University of Chicago)

[99] *Indigenous Anatomies*

Bioarchaeological research in the Andes has shed important light on Andean lifestyles in the past. From identifying diseases such as tuberculosis and juvenile rheumatoid arthritis, to analyzing migrations, dietary patterns, and interpersonal violence, bioarchaeology has demonstrated a unique capacity to evaluate certain categories of human behavior not accessible through other forms of analysis. For the purposes of interpreting the past, bioarchaeologists broadly view the body as a complex amalgam of both biological and cultural attributes; however, an emic understanding of the body itself is just beginning to emerge in Andean studies. In this paper, I will review the corpus of bioarchaeological research that deals specifically with manipulations of the living and dead body, specifically as it relates to broader theoretical trends regarding ontologies of the body. Based on these studies, I propose a more contextualized interpretation of the body based on perspectives from the indigenous worldview, as opposed to a strictly Cartesian model.

[99] *Chair*

Lozano, Sergi (IPHES), Luce Prignano (Universitat de Barcelona), Magdalena Gómez-Puche (-) and Javier Fernández-López de Pablo (IPHES)

[72] *Early Holocene Socio-Ecological Dynamics in the Iberian Peninsula: A Network Approach*

Late Glacial and Early Holocene environmental changes affected different domains of human demography, settlement, and subsistence patterns. The variable spatial patterning produced by the prehistoric hunter-gatherers archaeological record, from local bands to larger regional groups, demands new approaches for analysing the multi-scalar nature of human-environmental interactions.

In this paper, we present the preliminary results of a long-term research program aimed to decipher the relationship between demographic dynamics and cultural transmission in the Iberian Peninsula from the Late Magdalenian to the end of the Late Mesolithic. In particular, we will study the effect of the 8.2 cal B.P. cold event over the macro-regional structure of Mesolithic Iberian populations.

We will follow a two-steps methodology. First, we will compare spatial networks of archaeological sites before and after that climatic event, addressing global structural features, local indicators, and mesoscopic configuration. Second, we will evaluate the interplay between the observed structural changes and the evolution of cultural and demographic dynamics in the region.

Lozano Varela, Carlos (Manuel Lozano)

[14] *Análisis de Subsistencia y Selección de Recursos en Punta de Pájaro: Un Posible Yacimiento del Formativo Temprano en la Ciénaga del Guajaro Atlántico*

Esta investigación busca determinar la importancia de los recursos faunísticos para una población del Formativo Temprano en el norte de Colombia (6000–1000 A.P.). Los seres humanos que habitaron el sitio arqueológico de Punta de Pájaro en la Ciénaga del Guajaro Atlántico utilizaron una gran variedad de recursos faunísticos para complementar una dieta a base de plantas. Contrario a lo que se planteó en la teoría arqueológica para el norte de Colombia en los primeros años de investigación, este estudio muestra adaptaciones de los seres humanos a diferentes ambientes y hábitats. Las implicancias de estos resultados sugiere que los seres humanos que habitaron esta región aseguraron variados recursos pesqueros y de fauna terrestre disponibles posiblemente a lo largo de todo el año sin especializarse en un solo tipo de recurso.

Luby, Edward [132] see Lightfoot, Kent

Lucas, Virginia [24] see Osterholtz, Anna

Lucas, Leilani (University College London)

[189] *The Wild Side of Cyprus: An Integration of Archaeobotany and Zooarchaeology*

Recent research from both the island and the mainland Near East has changed what we know of the timing and dynamics of the spread of agriculture to Cyprus. The timing of the arrival of the initial explorers and colonists by late Pre-Pottery Neolithic A cultures of the mainland Levant, and the dynamics of cultural developments in subsequent cultural phases is providing further support for the unique Cypriot prehistoric culture. One aspect that has long characterised Cyprus in prehistory is the introduction and continual management and hunting of Mesopotamian Fallow deer. For the first time, archaeobotanical data from the earliest colonists to the Late Bronze Age are compared alongside the faunal evidence to reveal a protracted transition to full agricultural dependence in Cyprus with data revealing a pattern of fluctuating reliance on deer hunting, a protracted increase in reliance on cereal agriculture, and a continued reliance on gathering of wild resources. The evidence from Cyprus is compared to the mainland Near East and a distinct trajectory is demonstrated for the island.

Lucero, Lisa (University of Illinois at Urbana-Champaign)

[138] *The Contributions of Vernon Scarborough: Introductory Remarks*

In this paper, I highlight Vern's career path and contributions, particularly his work on water management and sustainability, and how his other interests, such as dual economy and heterarchy, tie in with the former. I will also focus on how his interdisciplinary approaches have paved the way for applied anthropology on an international level and with global implications.

[138] *Chair*

Lucero, Gustavo [139] see Franco, Nora

Ludwig, Larry [78] see Laluk, Nicholas

Lueth, Friedrich

[34] *Hopewell Culture and the Landscape—An Introduction to the Session*

Sites and monuments of the Hopewell Culture are of high significance and outstanding universal value; embedded into the landscape they have been intensively researched during the past years adding and applying geophysical surveys. New technology with multi-channel, vehicle towed magnetometers allows large scale operations of the landscape and it becomes affordable to go beyond the known monuments into the landscape. This presentation introduction will show some possibilities and discuss the starting point for an extended research agenda to be based on the following presentations.

[34] *Chair*

Luhman, Hope (The Louis Berger Group, Inc.) and Eric Voigt (The Louis Berger Group, Inc.)

[243] *Four Decades of Consulting: A Contractor's View*

Louis Berger has engaged in cultural and heritage resource management since the early 1980s. This long legacy of project successes, pitfalls, surprises, and minefields offers an interesting perspective of what works and what may not. As priorities and budgets rise and fall, new approaches meet with acceptance or resistance, leading to project streamlining or increased bottlenecks. Using project examples drawn from each decade, this paper explores consulting hits and misses and highlights the key lessons for better resource management in the future.

Lukas, Michael (The University of Georgia)

[146] *Geophysical Prospection at Caisteal Mac Tuathal in Perthshire, Scotland*

Geophysical prospection utilizing ground penetrating radar (GPR) and magnetometry in association with a general packet radio service (GPRS) topographical survey was conducted at Caisteal Mac Tuathal—an unexcavated potential Iron Age hill fort on the northeastern terminus of Drummond Hill near Kenmore, Perthshire, Scotland. Nestled above the rich archaeology of Loch Tay and Glen Lyon, Caisteal Mac Tuathal's prominence in the local topography, proximity to rich Iron Age landscapes, and its recurring presence within Scottish archaeological literature for over 100 years necessitates further investigation to clarify the extent of its occupation and utility. These surveys permitted the identification of select areas for future informative studies.

Lukas, Dominik (Department of Anthropology, Stanford University)

[202] *Discussant*

Luke, Christina M. [184] see Plekhov, Daniel

Lulewicz, Jacob (University of Georgia)

[98] *A Bayesian Radiocarbon Chronology for Southern Appalachia, A.D. 700–1400*

Advances in radiometric dating and statistical analyses are having a substantial impact on the archaeology of eastern North America, especially through the achievement of high precision intrasite chronologies. While detailed intrasite dynamics are invaluable to advancing understandings of rapid cultural change, more refined and empirically constructed regional histories are also necessary. An integrated regional Bayesian chronology is presented for southern Appalachia using extant radiometric data from northwestern Georgia, eastern Tennessee, and northeastern Alabama for the period between A.D. 700 and 1400. The purpose of the proposed chronological model is to help track the emergence of organizationally complex institutions across southern Appalachia and to explore the spatial and temporal relationships between sub-regional loci of cultural transformation. This study contributes to debates concerning the origins and timing of the adoption of Mississippian cultural traits in the region. More broadly, this study contributes to a multiscale perspective on the construction of regional social histories and to a comparative perspective on the tempo and rhythm of emergent institutional complexity.

Lulewicz, Isabelle (University of Georgia), Victor Thompson (University of Georgia), Thomas Pluckhahn (University of South Florida), Oindrilla Das (University of Alabama) and Fred Andrus (University of Alabama)

[132] *From Habitat Exploitation to Monument Construction: Exploring the Nature of Shell Deposits at Crystal River and Roberts Island through Stable Isotope Geochemistry*

Debates centering on the monumental nature of shell mound sites have often failed to provide direct empirical evidence for interpretation of monument construction and or simple midden accumulation. Our research in the Crystal River region illustrates the complexity of such sites. Through our research at Crystal River and Roberts Island Shell Mound, we aim to offer better quantitative assessments of the temporality of shell deposit construction, Native subsistence practices, and mobility patterns. We couple Bayesian analysis of radiocarbon dates with results from our study of oxygen isotope analysis from *C. virginica*, which was then coupled with the absolute value of the $\delta^{18}\text{O}_{\text{water}}$ values of surrounding habitats. Because these $\delta^{18}\text{O}_{\text{water}}$ values vary synchronously with salinity, assuming a relatively constant $\delta^{18}\text{O}_{\text{water}}$ /salinity gradient since the time of site occupation, we assessed shifts in habitat exploitation throughout the phases of occupation at both sites. Ultimately, midden accumulation occurred throughout the year in later phases of occupation while oyster collected from mound deposits indicate collection in colder months of the year. The results indicate shifts in habitat exploitation and a contrast in mound and midden season of collection and have allowed us to reimagine temporality of ritual and monumental construction in central Gulf Coast Florida.

Lundstroem, Inge [84] see Witt, Kelsey

Lundstrom, Craig [13] see Ambrose, Stanley

Luo, Wugan [180] see Nan, Puheng

Luo, Wugan (University of Chinese Academy of Sciences), Qihuang Yang (Shaanxi Provincial Institute of Archaeology), William D. Gilstrap (University of Missouri) and Michael D. Glascock (University of Missouri)

[180] *INAA and LA-ICP-MS Analysis of Painted Pottery from the Central Area of Yangshao Culture (ca. 5000–7000 B.P.), Northwest China*

The Yangshao Culture (ca. 5000–7000 B.P.) is renowned in the archaeology of prehistoric China for its large quantities of high quality painted pottery. Although the provinces of Shaanxi and Shanxi are rich in Yangshao material culture, scientific analysis has not often taken place in studies of the pottery until now. Bulk chemical analysis by INAA indicates production of painted vessels occurred at multiple sites in both Shaanxi and Shanxi provinces. Moreover, it is now apparent that several vessel types were being manufactured by individual producers in both Shaanxi and Shanxi provinces. With a clear understanding that there were multiple places of production, LA-ICP-MS was used to investigate the kinds of raw materials used as paint for pottery decoration. Results indicate that while painting technology is shared, not every site uses the same kinds of raw materials. This research focuses on the combined results of INAA and LA-ICP-MS analyses of 60 painted ceramic vessels from five different sites dating to the early-middle and middle periods of the Yangshao Culture. Combined bulk and micro-sampling chemical analytical techniques have provided new and significant insight into the locations of pottery production and the kinds of choices potters made during the middle Yangshao Period.

Lupo, Karen [64] see Battillo, Jenna

Lupo, Karen (Southern Methodist University)

[69] *Just How Depressed were the Fremont?*

Some of David Madsen's earliest work centered on understanding variation in Fremont lifeway's, especially subsistence. Current models of Fremont subsistence continue to emphasize geographic and temporal variation in subsistence but also identify resource depression of large game resulting from over-hunting and increases in population. In this paper, I present zooarchaeological data from 15 archeological sites on the eastern shore of Great Salt Lake spanning the Fremont interval. These data do not show a reduction or the depression of large artiodactyls. Similarly, additional zooarchaeological data from a large number of Fremont-age sites in the Great Salt Lake Desert do not show a change in the availability of large-sized artiodactyls. Changes in the abundances of certain artiodactyls appear to be related to natural changes in vegetation resulting from climate change.

Lustig, Terry [262] see Klassen, Sarah

Lute, Sabrina [193] see VanderVeen, James

Luzzadder-Beach, Sheryl (Department of Geography and the Environment, University of Texas At Austin)

[262] *The Constraints and Conditions of Water Chemistry for Human Use of Maya Tropical Wetland Fields*

A large wedge of our planet is tropical, and archaeology and natural science have long histories of tropical research. But we still know comparatively little about human interactions in the tropics, while rates of land and water use change that expunge ecological and archaeological records are accelerating. In this paper, we focus on evidence for ancient wetland management in the Maya World, especially around the evidence for water chemistry in multiple watersheds of northern Belize. Here, we synthesize the findings of water chemistry around ancient Maya wetland fields of the Rio Bravo, the New River, Booth's River, Sierra de Agua, the Rio Hondo, and Freshwater Creek. We then will compare water chemistry with the other known environmental and historical parameters of wetlands. Our main goal is to understand which suites of water chemistry would have helped or limited ancient Maya uses. We will also consider what is intrinsically tropical about these variables' relationships, recognizing the key lack of study on tropical wetlands.

[130] *Discussant*

Luzzadder-Beach, Sheryl [130] see Aebersold, Luisa

Lyall, Victoria

[15] *Considering Form and Meaning in Maya Mural Painting*

The French sociolinguist Roger Chartier argues that "form produces meaning": the physical arrangement and presentation of a text will influence a reader's reception of it (2004). In other words, the process by which a reader assigns a text meaning, consciously or not, depends as much on the material or physical form through which the text was published, distributed, and received as on its semantic content (Chartier 2004: 147). Elements such as format, layout, scale, and color give a text status, constrain its reception, and/or control the reader's understanding of it. This paper will consider Chartier's premise in relation to Maya mural painting: what relationship exists between form, meaning, and reception in the murals of northern Yucatan? I propose that changes in form, size, scale, and color seen in murals produced during the Late Classic to Terminal Classic transition provide an opportunity to consider the way in which peninsular communities responded to the political and cultural turmoil of the epoch. In particular, the rich assemblage of painted texts from Ek' Balam—capstones, calendrical murals, dynastic narratives—with their diverse formats offers a valuable point of departure.

Lyman, R. (University of Missouri Co)

[254] *Facade CRM: Protecting the Resource with Words Rather than Actions*

In 1983, Tom King noted ethical responsibilities of American archaeologists to six entities could be in conflict. A 1997 SAA workshop concluded that "stewardship" should be the "core or foundation" of all ethical principles, and recognized the broad socio-political context of modern archaeology. This context has resulted in facade CRM—statements by federal land-holding agencies that they are the stewards of the archaeological record, yet that record is knowingly destroyed by the agency and others. Criminal charges against SAA members who had stewardship foremost in mind exemplify that words do not protect the resource, but actions can be costly.

Lynch, Robert [6] see Knutson, Jen

Lynch, Sally (McMaster University)

[118] *Are "Coastal Cajamarca" Vessels Local Imitations? Petrographic Analysis Of Ceramic Vessels from the Late Moche (A.D. 600–850) Settlement "Huaca Colorada" in the Jequetepeque Valley, Peru*

The site of Huaca Colorada, in the Jequetepeque Valley, on the north coast of Peru, is an ideal location to examine cultural interchange and technological innovation from both a production and consumption perspective due to its occupation during the Middle Horizon (A.D. 600–1000). This period is marked by sustained cultural interaction throughout the Peruvian Andes. Evidence for this interchange at Huaca Colorada is found in the mixing of a number of different ceramic traditions within individual vessels, as well as in the inclusion of both traditional and foreign imports. In this paper, I will be presenting my analysis of paste recipes in the Huaca Colorada assemblage to highlight potential instances of technological mixing. I will be examining "Coastal Cajamarca" plates, a technological innovation linked to the spread of highland aesthetics and practices into coastal regions. A comparison of the geology of the valley with the petrographic data will determine whether the mineral inclusions in Coastal Cajamarca vessels are present or absent in the Jequetepeque. Furthermore, a comparison of paste recipes with traditional, locally produced vessels will highlight whether there are similarities in the technological traditions between local coastal potters and producers of Coastal Cajamarca vessels.

Lynch, Julieta (Departamento Científico de Arqueología, Museo de La Plata, FCNyM, UNLP, CONICET) and Marco Antonio Giovannetti (Universidad Nacional de La Plata)

[259] *Inca Landscapes in Midwest Catamarca (Argentina)*

This paper will introduce the problem of Inca settlements and their relation with local populations in the midwestern sector of Catamarca, specifically in the Hualfin and Quimivil valleys. This area has an early agricultural-ceramics occupation as seen in several archaeological sites with local patterns. When the Inca arrived during the first half of the fifteenth century, several previous elements of landscape were transformed and others were incorporated. However, the local population, with an apparent absence of military conflict, seemed to maintain some elements of their identity without major transformations. We explore the different strategies implemented by the Inca to articulate the realities of local populations and landscapes as they incorporated new territories. This reveals some differences with what happened in other regions, as the particularities of identity of different groups were taken into consideration as part of imperial strategies. These issues are explored based on evidence from the archaeological sites of El Shincal, Hualfin Inka, Villavil, Villavil 2 y Quillay.

Lytle, Whitney (University of Texas at San Antonio)

[77] *Changes in Ritual Practice: A Diachronic Example from Xunantunich, Group D*

The Mopan Valley Preclassic Project has been conducting research at Group D, Xunantunich, a Late Classic elite residential unit with an eastern ancestor shrine. This research has significantly changed our understanding of the establishment and ritual re-use of this group. Recent investigations have revealed Late/Terminal Preclassic constructions including a small courtyard platform and an early structure buried within the Late Classic ancestor shrine. Thousands of ceramic sherds were encountered associated with the buried courtyard platform indicating a possible ritual function. In addition to this problematic deposit, a similarly extensive Late Classic ceramic deposit was found within a room in the eastern ancestor shrine. The presence of these enormous ceramic deposits is suggestive of ritual activities that might include feasting and/or termination activities. Though termination rituals are commonly discussed within the Maya catalogue of ritualized acts, archaeologists have identified distinctions between these ceremonies that indicate they are more complex and varied than the vague term of "termination" implies. In this paper, I discuss these two deposits in light of established criteria for termination rituals and feasting activities and provide some preliminary thoughts of ritual practices and the re-use of this sacred place.

Lytle, Whitney [226] see Vara, Rachel

M Jensen, Anne [160] see Tackney, Justin

Mabres, Antonio [56] see Ghezzi, Ivan

MacDonald, Brandi Lee (McMaster University)

[13] *Perspectives on Ochre Provenance in British Columbia, Canada*

Elemental characterization of ochre sources and artifacts from southern and central British Columbia has demonstrated the potential for, and the limitations of, ochre provenance studies in this region. Using a combination of neutron activation analysis (NAA) and x-ray fluorescence (XRF), comparative elemental analyses of ochre artifacts from archaeological sites and five geologic sources identified evidence of variability in ochre acquisition over space and time. While the majority of ochre being used by hunter-gatherers was sourced locally, a small percentage was exotic, being traded or transported over longer-distances. Results from this study illustrate the importance of scale for both the analysis and interpretation of geochemical data obtained from ochre. These results also provide insight into the nature and intensity of short- and long-distance trade networks of ochre in British Columbia.

MacDonald, Sarah [114] see Yaquinto, Brian

MacDonald, Douglas (The University of Montana), Staffan Peterson (Yellowstone National Park) and Tobin Roop (Yellowstone National Park)

[208] *The Montana Yellowstone Archaeological Project*

The Montana Yellowstone Archaeological Project (MYAP) is a cooperative effort of the University of Montana (UM), Yellowstone National Park, and the Rocky Mountain Cooperative Ecosystem Study Unit of the National Park Service. Now in its ninth year, the MYAP engages undergraduate and graduate students at every level of cultural resource management projects so they are prepared for careers in the field. In addition, UM facilitates the completion of Yellowstone's CRM responsibilities in a fiscally-prudent manner and generates research for UM faculty and students. In all respects, the MYAP is beneficial to multiple players at the university and federal agency levels.

Macdonald, Danielle (University of Tulsa)

[214] *Replicating Surface Texture: Testing the Accuracy of Moulding Materials with Confocal Microscopy*

The use of surface metrology microscopes and analytical processes is proliferating for the analysis of archaeology materials. Data collected from these microscopes allows for reliable and reproducible measurements of surface texture. However, archaeological materials provide some unique challenges for microscopic analysis; at times objects cannot be directly examined, whether these materials cannot leave a museum or are too large to observe under a microscope. Because of these challenges, many researchers create moulds and casts of an artifact's surface prior to measuring surface texture. The replicate surface is assumed to be an accurate representation of the original surface texture; however, the reliability of different moulding materials is currently unknown. This paper evaluates a range of common moulding materials using confocal microscopy to test the resolution, precision, and accuracy of different moulding compounds for surface texture measurements of archaeological materials.

[214] Chair

MacDonald, Sarah (Northern Arizona University)

[239] *A Zooarchaeological Analysis of Subsistence Stress at Elden Pueblo: A Final Report*

This paper discusses zooarchaeological analysis conducted at Elden Pueblo in northern Arizona. As one of the last remaining Sinagua occupation sites in the San Francisco Peaks region, the site's abandonment during a cool and dry period suggests that the occupants may have left the area because of resource shortages. I hypothesize that populations must change acquisition and processing strategies in order to adapt to these shortages. Evidence of subsistence stress over time appears in archaeological faunal assemblages through a decrease in larger taxa, an increase in limb elements, and an increase in fragmentary elements. A sample of the Elden Pueblo faunal assemblage based on occupation date can detect changes in resource acquisition and processing strategies.

MacEachern, Scott (Bowdoin College) and David Wright (Seoul National University)

[177] *Fieldwork on Iron Age sites of the Benoué Valley, Cameroon, in 2014*

Iron Age settlements in the Benoué River Valley around Garoua in northern Cameroon were dispersed across the landscape, taking advantage of different eco-climatic zones to exploit a variety of natural resources. Fieldwork undertaken in 2014 located numerous mound sites in the area around Garoua, with occupation histories spanning multiple centuries. In particular, the site of Langui Tchéboua displays evidence for rapid accumulation of sediments approximately 700 years ago, which may have been a deliberate construction strategy that would have allowed the site inhabitants to plant both wetland and dryland crops. A mortuary feature and material culture suggest cultural influences from the Lake Chad Basin to the north. Settlement of a terraced agricultural site in the nearby Fali Mountain uplands occurs coeval to the occupation of Langui Tchéboua and potentially signifies agricultural diversification and intensification. The evolution of dozens of seemingly independent but inter-dependent sites along the Middle Benoué River region corresponds to similar political and social economies known elsewhere from precolonial western Africa.

MacFarland, Kathryn (School of Anthropology, University of Arizona)

[184] *GIS Models of an Iron Age Central Eurasian Macro-scale Religious Landscape*

Scythian, Saka, and Xiongnu peoples lived in northern central Eurasia throughout the Iron Age (1,000–100 B.C.E.). Current research in this region has revealed a variety of economic strategies employed by people who lived in this time period: agriculture, pastoral nomadism, and metallurgy. This project seeks to fill gaps in current understanding of landscape utilization and consistent iconographic usage by attempting to identify and study processes driving religious complexity utilizing a GIS-based approach to identify and study the structure of religious belief on a continental scale, or macro-scale landscape. For our purposes, religion is defined as a structured system of beliefs and symbols that permeate their everyday lives. Thus, analysis of distinctive and predominantly animal iconography on artifacts associated with the Scythian, Saka, and Xiongnu is a primary line of inquiry for identification of the way Iron Age peoples in central Eurasia structured their lives. Two types of inter-related analyses are discussed. General statistical analysis identifies behavioral patterns expressed in material culture; Integrated Distance Analysis (IDA) accounts for geographic and statistical proximity within complex datasets in pairwise comparisons of attribute categories. IDA explores and accounts for local variability, identifying which variable is most predictive of animal iconography.

Machado, Juliana (Universidade de São Paulo) and Nivaldo Peroni (Departamento de Ecologia e Zoologia (ECZ/UFSC), Un)

[135] *Paths and Plants: Territory and Mobility among the Laklãñ/Xokleng in Brazil*

The Laklãñ Xokleng Indigenous people occupy a tropical forest area of the southern valley of Brazil, in Santa Catarina. Historically, they were documented as a hunter-gatherer population with high mobility system who occupied and managed an extended and diverse territory, including high plateaus, forested valleys, and coastal areas. Archaeologically it is still difficult to affirm if this documented mobility pattern is an (in)direct result of European contact and reorganization of indigenous territories or a more ancient traditional social form. Despite its temporality, mobility was and is an important aspect of Laklãñ Xokleng life. In this paper, we will focus on the perception of mobility, its meanings and relation with territoriality among the living Laklãñ Xokleng. This population, since 1914, was forced to settle into a small, fixed, indigenous land by government policies. Although living in stable villages, their territorial perceptions, environmental management, and cultural discourse is attached to various movement rhythms. In this paper, we focus on their perception of territoriality and mobility during these contact and contemporaneous changes.

MacIntosh, Sarah (University of Nevada, Las Vegas), Levent Atici (University of Nevada, Las Vegas) and Sachihiro Omura (Japanese Institute of Anatolian Archaeology)

[75] *The Relationships between Smallholders, their Textiles, and their Bone Tools: A Case Study at the Central Anatolian Site of Kaman-Kalehöyük*

Textiles are rarely found in near eastern archaeological contexts due to the rarity of suitable environmental conditions for their preservation. Cuneiform texts and limited artifactual evidence have therefore often been the main sources informing archaeologists of the technological processes involved in textile production. Yet, scanty data exist specifically on textile-manufacturing tools made from bone, a readily available raw material, and the smallholders who crafted these tools. This paper investigates the production of bone tools for textile-working during the Bronze Age (ca. 3000–1250 B.C.E.) at the central Anatolian site of Kaman-Kalehöyük. We probe how the production of textile-working bone tools was organized and whether this organization of production was influenced by economic, sociocultural, and gender domains differentially. Furthermore, we seek to determine if the smallholders producing the bone tools for textiles were full- or part-time specialists when their livelihoods were dependent on subsistence economies. Investigating the textile industry at Kaman-Kalehöyük through a distinctive case study of bone tools associated with textile working allows us to explore how hinterland sites impacted textile trade networks during the development of complex societies.

[176] Chair

MacKinnon, J. Jefferson [238] see Sills, E. Cory

MacLellan, Jessica (University of Arizona) and Takeshi Inomata (University of Arizona)

[53] *Households, Ritual, and the Origins of Social Complexity in the Maya Lowlands: A View From the Karinel Group, Ceibal, Guatemala*

Payson Sheets' work at Ceren has greatly influenced investigations of ancient Maya households at both Aguateca and Ceibal. Here, we focus on recent excavations at the Karinel Group, a residential area at Ceibal. Due to its early foundation, Ceibal presents an opportunity to investigate multiple aspects of the origins of ancient Maya society. We discuss the development of the patio group, the typical Maya arrangement of stone house platforms around an open space, often rebuilt and reoccupied for generations. We also trace changes in the relationship between domestic ritual and public ceremony throughout the Preclassic Period, and we address the role that ancestor veneration may have played in the emergence of social inequality. Because of Ceibal's location in southwestern Petén, Guatemala, the earliest occupation of the site differs greatly from other well-known, very early Maya sites, such as Cuello and K'axob in Belize. Results from the Karinel Group suggest that a single model for the origins of social complexity cannot be applied across the Maya region.

MacMinn-Barton, Margaret

[63] *Buried Museum Textiles from the Prehistoric Americas*

The Arizona Museum of Natural History (AZMNH) has previously unexplored perishable materials, including 15 textile fragments of Peruvian, Mexican, and Southwestern origin. I present the results of a technological analysis and description of the manufacture of these fragmentary remains. Although this is a small sample for statistical research, it is sufficient for descriptive purposes. As these textiles have not received prior exposure, they should be described and presented. Taken together, they constitute a body of information useful for interpretation and comparative study. Provenance is undocumented; observations and interpretations about distribution is suggested in the context of current views about local cultures.

MacNeill, William [267] see Nossa, Eraina

Macrae, Scott (University of Florida)

[262] *A Comparative Approach to Understanding Ancient Agriculture Complexity in the Tropics*

Archaeologists have continuously struggled with understanding the complexity exhibited within relic agricultural practices. In this paper, we will explore a comparative approach to addressing this dilemma using cases studies from the charter states of southeast Asia (C.E. 800–1400) and the classic Maya kingdoms of Mesoamerica (C.E. 250–900). Special emphasis is placed upon the use of intensive practices and their resiliency within the agricultural strategy. Comparing the similarities and differences in ancient agricultural strategies across these tropical societies provides important insights in how archaeologists can interpret these systems. This is especially significant when considering new methods of analysis and differential presence evidence in these areas across the tropics. The comparative approach can offer new ideas into how these complex agricultural systems functioned in the past and contributed to the rise, peak, and eventual decline of these ancient tropical states.

[262] *Chair*

Macri, Martha [272] see Munson, Jessica

MacWilliams, A.C. [168] see Hard, Robert

Madella, Marco [125] see Lancelotti, Carla

Madrid González, Mariela Viridiana (Universidad Veracruzana)

[136] *Paisaje religioso: Adoratorios y eventos cívicos*

El paisaje dentro de los ámbitos de la arqueología, advierten en primera instancia que el paisaje en sí, no es un sinónimo del medio ambiente. Los paisajes son sintéticos; los sistemas culturales estructuran y organizan las interacciones entre la gente y su medio ambiente; según Cosgrove (1985). En este sentido el paisaje es el escenario para todas las actividades de una comunidad, como consecuencia de esto tenemos que el mismo se encuentra en constante cambio. En un contexto cultural arqueológico concreto, el paisaje es un registro material de patrones de conducta dentro de un entorno específico, y es también una construcción simbólica (Cosgrove 1985). Analíticamente el estudio de paisaje nos permite incluir y relacionar una variedad de asentamientos que mantienen interacciones culturales al formar parte de un mismo escenario cuyos aspectos van desde aspectos tecnológicos, patrones, hasta aspectos religiosos, sagrados y rituales.

Entre las diversas estructuras que fueron construidas por los antiguos pobladores mesoamericanos, son los adoratorios las que se están ligadas a aspectos de cosmovisión, ya que cuando escuchamos referirse a un "adoratorio" de manera inmediata pensamos en aquellas estructuras pequeñas, las cuáles, pensamos fueron los lugares en los cuales se rendían culto y/o sacrificios a los dioses.

Madsen, David

[69] *Discussant*

Madsen, Mark (University of Washington) and Carl Lipo (Binghamton University)

[272] *Measuring Cultural Relatedness Using Multiple Seriation Ordering Algorithms*

Seriation is a long-standing archaeological method for relative dating that has proven effective in probing regional-scale patterns of inheritance, social networks, and cultural contact in their full spatiotemporal context. The orderings produced by seriation are produced by the continuity of class distributions and unimodality of class frequencies, properties that are related to social learning and transmission models studied by evolutionary archaeologists. Linking seriation to social learning and transmission enables one to consider ordering principles beyond the classic unimodal curve. Unimodality is a highly visible property that can be used to probe and measure the relationships between assemblages, and it was especially useful when seriation was accomplished with simple algorithms and manual effort. With modern algorithms and computing power, multiple ordering principles can be employed to better understand the spatiotemporal relations between assemblages. Ultimately, the expansion of seriation to additional ordering algorithms allows us an ability to more thoroughly explore underlying models of cultural contact, social networks, and modes of social learning. In this paper, we review our progress to date in extending seriation to multiple ordering algorithms, with examples from eastern North America and Oceania.

Maeir, Aren [134] see Arnold, Elizabeth

Maezumi, Shira [263] see Iriarte, Jose

Magaloni-Kerpel, Diana [121] see O'Neil, Megan

Magnani, Matthew (Harvard University) and Natalia Magnani (University of Cambridge)**[54]** *Sámi Boat Building in a Cultural Revitalization Context: Unifying Community and Anthropological Goals*

The arctic indigenous people known as the Sámi inhabit northern Norway, Russia, Finland, and Sweden, comprising distinctive cultures and languages. The group has experienced a legacy of subjugation strongly evidenced to this day. In northern Finland, the expansion of community-driven cultural heritage revitalization programs have focused on the reclamation of traditional knowledge perceived as lost or disappearing. This remembering is an active process which involves engagement with past material culture detailed in museum records, the archaeological record, oral histories, and tools and materials of production themselves. The paper examines a specific case study involving the building of a traditional Sámi boat made of planks sewn together with pine roots. This project sought to create tangible benefits for the community undertaking the work, after establishing they wished to have the project recorded in detail. Simultaneously, we sought to address specific research questions comparing the community's engagement with past techniques and productions to that of experimental archaeologists.

Magnani, Natalia [54] see Magnani, Matthew

Magnoni, Aline [125] see Terry, Richard

Magoon, Dane (Defense POW/MIA Accounting Agency), Dale Hutchinson (University of North Carolina at Chapel Hill) and John Krigbaum (University of Florida)**[286]** *Dietary Adaptation in Coastal Virginia and North Carolina during the Late Woodland Period*

According to early historic accounts that depict coastal Virginia and North Carolina, maize was a component of Native American diet by the late sixteenth and early seventeenth centuries. There remain questions, however, regarding the introduction of maize into the region and how it was incorporated into local subsistence regimes, especially within a coastal setting. Previous stable isotope studies have focused upon the presence or absence of maize as a component of diet at the population level. This study will explore potential gender-based and aged-based differences in dietary adaptation within the coastal plain of Virginia and North Carolina during the Late Woodland Period, and focus on individual cases as examples of the cultural transformations which took place during this period.

Mahar, Ginessa (University of Florida)**[133]** *Reconsidering Mass-Capture Fishing Practices: Methodological and Theoretical Implications*

The term "mass-capture" is widely used in archaeological and zooarchaeological discourse to connote any form of capture that results in the simultaneous collection of multiple organisms. However, mass-capture as an umbrella term obscures critical variation among diverse techniques that have implications for anthropological interpretation. Nowhere does this limitation have more of an impact than in coastal settings, where fishes and shellfishes constitute the majority of subsistence prey items.

This paper reconsiders mass-capture technologies as they apply to fishing practices along the coast of the southeastern United States. Recent research has begun to more intensively investigate southeastern fisheries, addressing issues of antiquity, intensification, and sustainability. Using zooarchaeological analysis, these researchers have speculated on the types of fishing techniques used in antiquity and the potential ecological and social impacts of these practices—particularly mass-capture practices. The present research adds to this discussion by unpacking the term mass-capture and challenging common assumptions about what it might mean for the anthropological interpretation of past coastal dwelling. Additionally, novel data pertaining to fish weirs and seine nets will be presented as part of my ongoing research along the north Florida Gulf Coast featuring ethnographic, archaeological, and experimental methods.

[133] *Chair*

Maher, Thomas**[30]** *Complying with NAGPRA at the Largest Public Utility: It's Complicated*

The Tennessee Valley Authority has control of approximately 8,000 human remains and 100,000 funerary objects stored in multiple major research Universities in the southeastern United States. It also manages 293,000 acres of land with 11,000 known archaeological sites. The successes, pitfalls, and unexpected discoveries resulting from complying with NAGPRA over the last 6 years are evaluated in light of the future of prehistoric archaeology in the southeast U.S.

Maher, Ruth [210] see Bond, Julie

Mahoney, Maureen (Seminole Tribe of Florida THPO)

[29] *Tribal Community Engagement and Archaeology: The Story of the Seminole Tribe of Florida's Tribal Historic Preservation Office*

Like other THPOs across the country, the Seminole Tribe of Florida's Tribal Historic Preservation Office (STOF THPO) is charged with serving the STOF communities and preserving their cultural heritage. With a staff of 17 individuals, the STOF THPO is heavily involved with both on and off reservation compliance projects ranging from home sites, pasture improvement projects, and wetland mitigations. However, as this paper and the symposium will demonstrate, these projects only make up a percentage of what the STOF THPO completes. With all of these projects, the underlying goal for the STOF THPO is to work with various communities that make up the STOF so that the tasks are completed appropriately and information can be shared. This paper will provide both a brief synopsis of the daily work that the STOF THPO completes, and will also detail how these projects provide the STOF communities an outlet in which to participate in decisions regarding heritage preservation. Through active participation with other THPOs we hope not only to share the STOF THPO story, but also to understand the makeup and specific goals that drive the direction for other THPOs.

[203] *Discussant*

[29] *Chair*

Mainland, Ingrid, Jane Downes (University of the Highlands and Islands Archaeology), Scott Timpany (University of the Highlands and Islands Archaeology), Julie Bond (Dept. of Archaeological Sciences, University of Br) and Jen Harland (University of the Highlands and Islands Archaeology)

[210] *The Potential of Coastally Eroding Palaeoenvironmental Deposits and Middens as Climatic and Cultural Data Reservoirs*

The acute problem facing Scotland's archaeological heritage through loss and damage by rising sea levels and increased storminess in response to global climate warming is gaining increasing recognition. This threat is prompting diverse mitigating responses, most significantly Historic Scotland's Coastal Zone Assessment Surveys and the work of the SCAPE Trust. These surveys have, however, predominately focused on the recording of cultural, rather than palaeoenvironmental remains; while midden sites or coastal peats have been noted, such sites have not been analysed or assessed in detail. Their potential as a source of evidence for environmental change and human response to it thus remains largely unexplored. This paper will present a review of coastally eroding middens and other sources of palaeoenvironment evidence in selected regions within the Northern Isles of Scotland to highlight the scale, extent, significance, and character of this resource and the current and future impact therein of erosion and rising sea levels. Using cases studies drawn from recent work in Orkney, the paper will go on to illustrate the potential of these sites for addressing human response to environmental change, in contributing to the development of modern marine resource management and as unique data reservoirs for local climatic change across millennia.

Maitland Gardner, Amy (University College London)

[47] *Their World at Hand: Entering the Language of Gesture in Classic Maya Art*

Our hands shape and express the social and material worlds in which we live by creating and measuring things around us and communicating our thoughts, feelings, and ideas. In Classic Maya iconography, hands are represented in a variety of shapes and forms, which offers a unique glimpse into ancient Maya gestural practices. This paper journeys through the actions and representations of hands in the ancient Maya world, exploring the dynamic and dialogic relationships between bodily gestures and their referents in figurative art. What is the nature of this gestural language? Who could 'read' gestures in the iconography? Where did these gestures come from? And when did this body language end? By asking such questions, and by drawing upon gestures studies in art history and anthropology, this paper proposes that this visual language of gesture is rooted in deeper notions of time, measurement and offerings, which span the history of Maya culture and crucially situates Classic Maya figurative art within this historical and cultural framework. Fundamentally, this paper argues that the broader practice of gestures beyond elites was the repertoire from which certain gestures were drawn, with careful selection to function in particular iconographic contexts during the Classic Period.

[47] *Chair*

Majewski, Teresita (Statistical Research, Inc.), Jeffrey Altschul (Statistical Research, Inc.) and Antonio Arantes (State University of Campinas, Brazil)

[10] *Heritage as Collaboration: The 2015 Inaugural Inter-American and Caribbean Cultural Heritage Working Group Meeting, UNICAMP, Campinas, Brazil*

In response to ever-growing threats to intangible and tangible cultural heritage in the region, the Anthropology Department of the State University of Campinas (UNICAMP), Campinas, Brazil, organized and held the inaugural meeting of the Inter-American and Caribbean Cultural Heritage Working Group on August 11–12, 2015, at UNICAMP. The goal is to establish a permanent collaborative forum to explore ways to improve anthropological practical and theoretical approaches to cultural heritage issues. Representatives from major anthropological and archaeological associations based in the Americas and the Caribbean, the UNICAMP Anthropology Department, and interested individuals discussed how anthropologists should engage with these issues to foster outcomes in the best interest of society. The group drafted a declaration on the need to protect and safeguard cultural heritage in the Americas and the Caribbean and stressed the need for improvements in the theoretical and practical approaches used to develop community-based investigations about and interpretations of cultural heritage. The declaration is expected to foster increased discussion and collaboration on cultural heritage studies.

Makowski, Krzysztof, James Davenport (University of New Mexico), Mercedes Delgado (QALLTA, Centro de Investigación para la Preservación), Iván Ghezzi (IDARQ, Instituto de Investigaciones Arqueológicas) and Michael Glascock (MURR)

[57] *Comparative Characterization and Sourcing of Pottery Styles from the Lurin Valley, Central Coast of Peru*

Our goal is to reconstruct networks of ceramic production and exchange on the Peruvian central coast through a comparison of compositional datasets on pottery and soil samples from the Lurin valley. While one dataset from Villa El Salvador dates to the late Early Horizon, most of the pottery sample comes from Late Horizon occupations at the Pachacamac, Pueblo Viejo, and Huaycan de Cieneguilla sites. In Tawantinsuyu, the products and networks of exchange connected heterogeneous populations, and thus the identities of producers, traders, or builders of public and domestic spaces did not coincide. Imperial ideology materialized in official architecture and paraphernalia, but not always in the vernacular versions. For pottery, producers followed local and regional styles and technologies, possessed their own clay sources, standards for temper selection and inclusion, and recipes for pigments, to produce both local and imperial styles. To what extent then did Inka control affect the technological choices of these local potters, especially for reproducing imperial forms and decorations? Our research focuses on the effect of Inca subjugation on central coast pottery production by comparing compositional groups and contrasting them with clay sources to reconstruct the networks of pottery production and exchange.

Maksudov, Farhod [134] see Hermes, Taylor

Maldonado, Blanca (El Colegio de Michoacan, A.C.)

[100] *The Environmental Dynamics of Colonial Mining and Metallurgy in the Bishopric of Michoacan, 1522 to 1810*

Mining and metallurgy played a critical role in the economic, political, and social development of Spanish American colonies, and although it has consequently received extensive attention by scholars, there have been very few studies of the environmental dimensions of these industries. The present work explores the impact of mining and processing of metal ores on the environment, for the mining districts located along the Bishopric of Michoacan (which included the modern states of Michoacan and Guanajuato, as well as parts of Jalisco, Colima, Guerrero, and San Luis Potosí), from the beginning of colonial mining (1522) to the turn of the nineteenth century. It also details the more local environmental dynamics of metallurgy and fuel wood consumption—the main source of energy for metal smelting and processing—and their related social aspects.

Maldonado, Jesus [110] see Shirazi, Sabrina

Malhi, Ripan [84] see Witt, Kelsey

Malloy, Maureen (Society for American Arch), Crystal Alegria (Project Archaeology), Robert Connolly (University of Memphis) and Giovanna Peebles (Independent Scholar/Retired VT State Archaeologist)

[71] *Diggers Evaluating Diggers: A Collaboration between SAA and the National Geographic Channel*

Since 2014, the SAA has collaborated with the National Geographic Channel to evaluate episodes of the cable television program *Diggers* and to recommend changes to help ensure a more ethical and accurate portrayal of archaeology. Our paper will examine the history of the collaboration, guidelines developed for reviewing episodes, and a suggested framework for crafting accurate and ethical portrayals of archaeology in the context of a reality television show. Lastly, we will evaluate the outcomes of our efforts from the perspectives of both the discipline and the viewing audience.

Manahan, T. (Kent State University) and Emily O'Brien (independant scholar)

[86] *Recovery and Conservation of a Classic Maya Shell Mosaic Human Trophy Skull from Xuenkal, Yucatan*

Human trophy skulls have a long history in Mesoamerica. Excavation of Structure 9M-136, an elite household in the center of the ancient Maya center of Xuenkal revealed a trophy skull in situ from funerary context, where it was found placed on the chest of an elite individual within a complex burial deposit. The primary individual was interred with a bifacial flint lance, a carved bone pendant, and the trophy skull resting on his chest. The skull had been extensively modified in preparation for its use as a trophy. The front of the skull had been decorated with over 100 pieces of shell tesserae to create a mask in the form of a human face, and additional shells were used to create dangles that hung down from either side of the skull. This presentation details the context of the find, the process of excavation, analysis of the skull, and the shells used to make the mask, and the restoration of the piece.

Mancini, Jason (Mashantucket Pequot Museum)

[61] *"The More Usual Place of their Abode": Ethnogeography, Community Dynamics, and Household Economies on the Mashantucket Pequot Indian Reservation*

Between December 1773 and June 1774, a new road was surveyed and laid out across the Mashantucket Pequot Indian Reservation. Two survey points along this route mention an "Indian meeting house" and a "small Indian house." The construction of this road and the architectural landmarks along it illustrate, in part, the considerable adjustments that Pequots were making in the aftermath of colonization and land dispossession. Public architecture, such as the "meeting house," was unknown at Mashantucket only 10 years earlier and prior to that time, there would have been little question that the "Indian house" was a wetu or wigwam. In this maelstrom of change, informal land divisions, social tensions, and the rapid shift to a market economy highlight many new ways of living. This paper provides a framework for accessing and contextualizing hidden indigenous histories—notably household and community dynamics—through the integrative use of historical archives, archaeological data, and ethnogeography. Data from Mashantucket problematize an otherwise static perception of Indian agency and reveal a rich, complicated, and dynamic cultural landscape.

Manion, Jessica (University of Calgary) and Geoffrey McCafferty (University of Calgary)

[234] *Mortuary Practices at Locus 3, El Rayo, Nicaragua*

Excavations in 2009 and 2010 established the presence of mortuary remains at the El Rayo archaeological site, located on the Asese Peninsula near modern Granada, Nicaragua. In 2015, an additional field season expanded upon previous excavations in Locus 3, one of two known cemetery locations at the site, exposing several more burial urns, and further investigating previously known urn burials. This new data contributes to a greater understanding of mortuary practices at El Rayo, which at Locus 3 includes a cluster of burial urns in association with a stone structure. The urns, containing burials from the Sapoá (800–1350 C.E.) period, include several examples of multiple-individual interments, which is accentuated by a child burial in Feature 8 alongside portions of another, older, individual. Possible re-deposition of remains within urns alongside multiple individuals may suggest continued use and reuse of the cemetery by related peoples throughout time, indicating a maintenance of social identity through burial rituals.

Mann, Kristen [189] see Cabaniss, Andrew

Manney, Shelby

[168] *Material as Behavior: The Role of Generative Information Mechanisms in Restricting and Aiding in Settlement Dynamics*

Archaeologists have long argued that the built environment is an expression of prehistoric community organizations, social interactions, and changes through time. Traditionally, archaeologists have interpreted buildings and settlement landscapes as proxies for estimating population size; indices of power structures; representations of community organization; markers of social interactions; etc. Even though there has been an increasing awareness of the importance of architecture it has been challenging to operationalize a shared common method and dialogue. The concept of formalization of approaches to ancient architecture is not new, yet in most areas archaeologists have been slow to adopt methods and concepts for analysis of built environments from

disciplines outside of archaeology. To this end, I will explore the applicability of outside methods and concepts as a means of operationalizing and unifying existing scholarship. I will consider concepts of: (1) form and place as conceptualized by French architect Pierre von Meiss (1990); (2) urban morphology and “the Conzenian tradition” of “townscape” (in Smith 2011; see also Conzen 1968, 1988; Whitehead 2001, Lilly 2000, and others); (3) Roland Fletcher’s work on the limits of settlement Growth (2007). In this way, empirical evidence should outline preliminary patterns, baselines, thresholds, and boundaries.

Mannheim, Bruce (University of Michigan)

[99] *Ontological Foundations of Inka Archaeology*

The “ontological turn” ties several core anthropological questions about cultural variability in human interaction with the world, all of which can best be summarized by Sapir’s dictum—from the 1920s—that “the worlds in which different societies live are distinct worlds, not merely the same world with different labels attached.” Drawing on evidence—ethnographic, grammatical, cognitive, material, and visual—from the central Andes (principally from Southern Quechua and their Inka ancestors), I discuss several areas in which sensitivity to ontological ordering principles constrain the interpretation of archaeological and ethnohistorical evidence: properties of the world; spatial orientation and principles of semiotic interpretation; agency; and causal structures. In each case, I identify social practices that presuppose and entail the ontological categories. All ontological structures are produced by social practices or by social practices plus cognitive mechanisms identified independently of the ontological question; none make reference to “cosmology.” And in conjunct, they permit a more parsimonious interpretation of material evidence, suggesting that some absences of evidence are in fact evidence of absence. Most strikingly, they suggest a new interpretation of the spatial organization of Inka Cuzco.

Manning, Nikki (University of Montana)

[35] *When the Small, Local Archaeology Project Goes Global—The Missoula Historic Underground Project*

During the fall of 2012, a local, urban archaeological survey project was conducted to see what evidence remained of the Missoula, Montana, historic “underground” landscape. Now heading into the fourth year of research and expanding geographically into other cities of the American west, the project which actually began from public inquiries into the existence of a small town underground continues to hold the interest of the local community and beyond. As the project has continued to grow in scope and interest, and a book published based on the initial research has reached a small but global audience, measurable educational results are more difficult to evaluate, especially with the use of social media and other internet tools. This is challenging not only in terms of tracking successful use of digital technology for educational outreach but also the responsible dissemination of information about a topic that captures imagination and struggles against myths and urban legends—in this case, an archaeology project dedicated to providing systematic, fact-based documentation that aids in understanding how the historic political and social climate of developing urban areas may have affected the creation and use of space and the built environment.

Manning, Sturt [106] see DAloim Guedes, Jade

Mans, Jimmy (Leiden University)

[3] *Transforming Material Collectives: The Subaltern vs the Global*

In this paper, the relation between transforming material collectives and subalternity is investigated. When a people or group incorporate new materials hereby slowly transforming its own material collective into the similar new ‘dominating’ material collective, does that imply that the ‘subaltern’ loses its archaeological identity? Does it mean the dominating new collective always represents ‘hegemony’? Not necessarily. In this paper, cases from the circum-Caribbean are discussed concerning their indigenous historical and contemporary archaeologies. Since the new boundary context came into existence in 1492, the once separate Indigenous and European material collectives started to blur. Indigenous material assemblages transformed through the influence of the European colonizer. Vice versa, the early European colonizers transformed their collectives with indigenous elements. The original material collectives no longer exclusively represent either the indigenous or the European colonizer, but both have transformed each other’s local collectives. The transformation effect of this on the Indigenous-Caribbean collectives is discussed.

Manzanilla, Linda [129] see Froese, Tom

Manzano, Bruce (University of Kentucky) and Carolyn Rock (Brockington and Associates, Inc.)

[164] *Bone Tool Production and Use in the Interior of Southern Florida*

This poster discusses patterns of bone tool production and use in light of results from recent testing at six sites in the interior of southern Florida. More than 100 worked bone tools and production wastage were identified from the six sites dating from the Archaic to the Historic periods. The artifacts reveal patterns of bone tool production from various elements of Chondrichthyes (cartilaginous fishes), Reptilia, Aves, and Mammalia. Functional interpretations of the bone tools and production wastage along with the range of activities that likely took place on the sites will be discussed.

Marajh, Leah (Trent University)

[262] *Water Management in the Ancient States of South India and Sri Lanka*

Water management practices have been instrumental in the rise and collapse of many complex societies. Informed through case studies from South India and Sri Lanka, this paper explores the importance of water management in their developmental trajectories during the Chola (848–1279 C.E.) and Sinhalese Empires (377 B.C.E.–1310 C.E.). Initial conditions that led to the impetus for water management include environment and climate changes. Continued growth and prosperity relied on the development and use of more sophisticated water management practices for agricultural intensification, political hegemony, and ritual worship. Interest is placed on understanding how subsequent political and social changes resulted in water management practices becoming vulnerable to perturbations, which may have ultimately contributed to the decline and collapse of these tropical societies.

Marc, Testé [96] see Cyril, Castanet

Marciniak, Stephanie [85] see Harris, Alison

Marccone, Giancarlo

[97] *The Andean Road a Long Trajectory of a Social Institution*

Infrastructures like the Qhapaq Ñan or Inka roads can be viewed as social institutions that are the result of a complex network of social interactions between populations and their environments and fulfill several local social needs. This vision opposite the ones that understand that centralized government is necessary for local level communities to maintain certain infrastructure, like irrigation canals and roads.

The Inka road system is an intricate network of Tambos, administrative centers, and roads long thought of as the network that allowed efficient administration of the Inca Empire. The traditional modes hold that the nodes of the network collapsed during the conquest, when administrative centers lost their centralized management.

Looking at the roads as networks in a long time trajectory suggests the links (roads) of the network came to hold more importance than the nodes, since the roads have local meanings in the interaction of men and their space. In this way, the roads helped to institutionalize this relation and play a key role in shaping historical events after the Spanish conquest until the present day.

[283] *Discussant*

Marcoux, Jon (Salve Regina University)

[284] *Documenting Southeastern Indian Coalescence during the early Carolina Indian Trade*

Past research has outlined the profound effects of the Carolina Indian deerskin and slave trade on the cultural landscape of the southeast during the late seventeenth and early eighteenth centuries. This work has identified a number of historical processes (e.g., population movements, disease, endemic violence, and economic transformation) stemming from the interaction of southeastern Indian and European Colonial worlds. Together, these processes forged a dynamic, even chaotic, landscape. In adapting to this new colonial landscape, many southeastern Indian groups employed social coalescence as a strategy to ameliorate population loss resulting from disease and slave raiding. In this paper, I compare the pottery assemblages from a number of contemporaneous Indian communities across the southeast in order to explore how "improvised" communities were enacted by ethnically diverse remnant or refugee groups. I argue that patterns of diversity in these pottery assemblages reflect distinct potting traditions that can be used as material markers of this region-wide strategy of coalescence.

[284] *Chair*

Marcum-Heiman, Alesha (University of Oklahoma), Leland Bement (Oklahoma Archaeological Survey), Kristen Carlson (Augustana College) and Brian Carter (Oklahoma State University)

[123] *Renewed Investigation of Sites within the Black Mesa Region, Oklahoma Panhandle*

Early archaeological investigations in the Black Mesa area of Oklahoma were geared toward the discovery of additional evidence of "Early Man" in North America. The 1926 discovery of the Folsom type site encouraged E.B. Renaud to explore caves along the Dry Cimarron just 50 kilometers downstream. Rather than discovering additional Paleoindian sites, the University of Denver's surveys documented numerous post-Folsom occupations. Despite the early documentation of these sites, systematic investigation in the area has been sporadic. Renewed interest in this region resulted in several systematic surveys and test excavations at four archaeological sites. Results of these studies address gaps in our current understanding and build a foundation for future research. In addition to presenting new radiocarbon dates, this paper presents the results of a lithic analysis conducted to assess the usage of local outcrops of Dakota quartzite through time. Using newly acquired data, broader questions regarding subsistence and inter-regional spheres of interaction are also addressed.

Marek-Martinez, Ora (Navajo Nation)

[203] *Discussant*

Marin, Rosa [31] see Pozorski, Shelia

Marin Arroyo, Ana B. [134] see Jones, Jennifer

Marino, Marc (University of Arkansas), Nathan Meissner (Southern Illinois University, Carbondale) and Lucas Martindale Johnson (University of Florida)

[179] *Source Variability and Technological Variation of Domestic Lithic Production at Santa Rita Corozal, Belize, during the Late Postclassic Period*

Lithic raw material acquisition and household flaked stone crafting continues to enable a better understanding of ancient Maya domestic economies. One such example at Santa Rita Corozal, Belize, seeks to determine how local households provisioned themselves and how Santa Rita Corozal articulated with other Chetumal Bay sites during the Late Postclassic Period (A.D. 1200–1530). Data presented in this paper challenge previous models of resource exploitation and exchange by suggesting that a diverse suite of lithic raw materials not associated with Colha chert deposits appear at Santa Rita Corozal. Likewise, several households at Santa Rita show evidence for intensive local craft production of small projectile points and other formal tools. The raw cryptocrystalline silicates needed for crafting these artifacts may have been available from more nearby geologic deposits. Importantly, subtle differences among haft types on the points emerge when comparing Colha to non-Colha materials. This evidence for local craft production and exploitation of both distant Colha and local non-Colha cherts demonstrates a diversity of exchange and technological practice.

Marino, Marc [212] see Meissner, Nathan

Marjenin, A. E. [159] see Hemmings, C.

Markel, Marilyn [267] see Toney, Elizabeth

Marken, Damien (Bloomsburg University)

[27] *Low-Density Urbanism in the Classic Maya Lowlands: A View from El Perú-Waka', Guatemala*

As a key example of indigenous New World urbanism, the development, organization, and abandonment Classic Maya cities are subjects of great anthropological importance. Despite their comparative significance, for much of the twentieth century Classic Maya centers (ca. 250–950 C.E.) have been viewed by the public and many scholars as “non-cities,” the capitals of complex polities, but lacking the residential density characteristic of fully urban places. Roland Fletcher has recently proposed that Maya urbanism belongs within a new comparative urban type which he calls “low-density, agrarian-based urbanism.” Like all typological categories, “low-density, agrarian-based urbanism” is not without its faults, however. This paper will present over ten years of settlement research at the Classic Maya city of El Perú-Waka', Guatemala, in order to evaluate the strengths and weaknesses of Fletcher's model of low-density urbanism as applied to the Maya area. The data from El Perú-Waka' suggest that while Fletcher's overall model is widely applicable to the Maya Lowlands, several common assumptions about Classic Maya cities require reexamination.

Markin, Julie (Washington College) and Vernon Knight (University of Alabama)

[8] *A Mode-based Approach to Seriation of Woodland Pottery in Northwest Georgia*

The complex nature of ceramic style geographies of the Woodland Period in northern Georgia has led many to argue that pottery cannot be properly seriated in this region. When we rely on our current typological tools, this assertion holds true because major styles are contemporaneous for long periods. A further complication is the use of different decorative modes within a small community or even by a single household. The overlapping nature of decorative modes does not yield itself well to seriation across a single region as large as northern Georgia but argues rather for the construction of mode-based micro chronologies. A mode-based analysis of pottery from secure contexts in a seven county area of northwest Georgia reveals the gradualness of style replacement between modes. The continuing evolution of elements within a single stamping tradition forces us to rethink and even discard current diagnostic types. Redrawing chronological boundaries in this region based on subtle stylistic connections will enable better assessment of the precise timing and tempo of changes in population, settlement, subsistence, and sedentism.

Marklein, Kathryn [147] see Yoakam, Stacia

Marko, Alex (Joukowsky Institute for Archaeology and the Ancient World)

[33] *Discussant*

Markofsky, Steve (University College London) and Steven Markofsky (Institucion Mila y Fontanals, Spanish National Res)

[150] *The Desert is Coming: A Multi-Proxy Approach to Investigating Late Holocene Human/Environmental Dynamics in the 'oasis' Margins of Central Asia*

The inland alluvial fans commonly found across the deserts of central Asia constitute regions of environmental and geomorphological transition as well as social liminality. Straddling the line between fertile, sustainable environments and adverse regions often incapable of sustaining significant human occupation, these dynamic and evolving regions are excellent case studies through which to study the dynamic processes that have characterized human/environmental relationships throughout the Holocene.

This paper examines local socio-ecological variability in one such inland delta, the Murghab delta in Turkmenistan. Due to its rich archaeological heritage, the Murghab offers an excellent research environment to examine late Holocene socio-ecological dynamics. Research suggests that human settlement and landscapes were characterized by pronounced local variability not always best described by regional approaches. Via an integrated approach that incorporates remote sensing, field survey data, and geoarchaeological analysis, this paper examines local socio-ecological 'niches' in the broader context of regional palaeoclimate and paleogeography, as well as the co-development of settlement and environment in these unique oasis regions. Multiproxy analyses include Loss on Ignition, Particle Size Analysis, geochemistry, and micromorphology. Via these integrated approaches, the paper highlights local geomorphological and ecological variability, and explores their association with differing patterns of occupation, land-use, and exploitation.

[150] *Chair*

Markofsky, Steven [150] see Markofsky, Steve

Marks, Theodore (The University of Iowa), Grant McCall (Tulane University), Andrew Schroll (Tulane University) and James Enloe (The University of Iowa)

[94] *Applying Frames of Reference: The CLIMAP Dataset and the Middle to Later Stone Age Transition in the Namib Desert*

In his landmark work, "Constructing Frames of Reference," Lewis Binford attempted to create a series of models relating hunter-gatherer adaptive responses to observable climatic and ecological dynamics. In southern Africa, the large scale shift toward microlithic technologies associated with the Middle to Later Stone Age transition is believed to coincide with the environmental changes that occurred around the Last glacial Maximum. It has been frequently hypothesized in the African literature that these technological shifts corresponded with shifts in mobility and foraging strategies driven by environmental change. However, datasets useful for actually testing these ideas around the Middle to Later Stone Age transition have been lacking. Here, we use data from the CLIMAP Project, a synthetic model of global and regional climatic conditions at the LGM, and lithic sourcing data from two sites in the central Namib Desert of Namibia, to model conditions at the LGM and test expectations of hunter-gatherer mobility, site use, and land use patterns against archaeological data.

Marks, Naomi [294] see Lorenz, Samantha

Markus, David (University of Florida)

[213] *The Archaeology of Frontier American Judaism: Exploring the Mosaic of Jewish Domestic Religious Practice in the 19th Century*

The Block Family Farmstead in Washington, Arkansas, represents the first documented Jewish immigrant family to arrive in the state and their home is the

most extensively excavated Jewish Diaspora site in North America, dating to the first half of the nineteenth century. The site gives unique insight into the domestic practices of a Jewish family on the frontier in absence of an ecclesiastical support network or coreligionist community. The faunal assemblage recovered primarily from the home's detached kitchen may indicate the manner in which the Block family transgressed against the tenants of their faith, either intentionally or through pragmatic necessity. However, two key features, an articulated fowl burial and a trash pit feature, also adjacent to the home, may provide material evidence to suggest that the family attempted to atone for, or mitigate these potentially unintentional lapses in faithful religious observance, while masking the more orthodox elements of their religion from their potentially xenophobic neighbors. Although they appear isolated, when these features are viewed within the same context of the yard space of a known Jewish family, they provide the artifactual evidence to explain the complicated mosaic of practice required of frontier Jews for their religious, social, and economic survival.

Markussen, Christine [183] see Simon, Katie

Marquardt, William

[60] *Dialectic in Historical Ecology*

It has been my privilege to call Carole Crumley a friend for 44 years. Our experiences working together in Burgundy, France, in the 1970s and 1980s were formative to my research perspective in historical ecology, a perspective to which Carole herself has been a major contributor. Historical ecology is the multiscalar and multitemporal study of the dynamic relations between people and their environment. But "environment" is more than the sum total of one's physical surroundings. As perceived by humans, environment is always cognized and often mystified, and it is subject to interpretation and reinterpretation based on spiritual beliefs, vested economic interests, and power relations. Therefore, the historical study of human-environment relations cannot be separated from the study of social, economic, and political relations. For both Carole and me, dialectical method has always been an essential part of historical-ecological investigation, but it is sometimes poorly represented or missing altogether from studies today regarded as historical ecology. A dialectical approach can enrich historical-ecological understandings and help to resolve differences among contemporary scholars who focus variously on agency, materiality, landscape, monumentality, and relational (anomic) ontology.

Marquardt, William (University of New Mexico, United States Forest Service)

[65] *Effects of Clay Shrinkage on Sex Estimation of Dermatoglyphic Impressions on Ceramics*

Dermatoglyphic impressions—the patterns of ridges and furrows, whorls, loops, and arches present on human hands and feet—are recognized by forensic scientists as having sexually dimorphic characteristics. Sex and age can be estimated from these impressions achieving rates of accuracy similar to other metric methods utilized in physical anthropology and bioarchaeology (Marasco et al. 2014, Mundorff et al. 2014). Despite this potential, analysis of dermatoglyphic impressions left on plastic materials (e.g., ceramics) has received little attention in archaeological studies. Stinson (2004) and Kamp (1999, 2001) remain two of only a handful of archaeologists who have given any serious attention to dermatoglyphs. This method of analysis is in its infancy and more research is needed to maximize its potential for the archaeologist. For instance, the effects of clay shrinkage on sex estimation from dermatoglyphs are poorly understood and may lead to erroneous sex estimates in fired ceramics. This study, utilizing ridge density analysis, investigates potential bias in data arising from shrinkage of clay during the drying and firing process in a sample of dermatoglyphic impressions on clay. Initial results suggest that sex can still be determined despite shrinkage found in a sample of native New Mexican clays.

Marquardt, William [290] see Walker, Karen

Marquez, Heriberto (California State University, Monterey Bay), Cristina Verdugo (University of California, Santa Cruz), Hector Neff (California State University, Long Beach) and James Brady (California State University, Los Angeles)

[93] *Exploring the Use of Red Ochre at Midnight Terror Cave, Belize*

The earliest use of red pigment in mortuary contexts has been documented in Neanderthal burials during the Upper Palaeolithic Period (50,000–12,000 B.C.E.) in Europe (Roper 1991). The use of red pigment for both mortuary and decorative practices has been identified in Mesoamerica as early as the Early Preclassic. These practices include the sprinkling or encasing of various artifacts such as shell or bone in either red ochre or cinnabar. Investigations at Midnight Terror Cave (MTC) carried out between 2008 and 2010 recovered nearly 10,000 human bones. Among these, 27 bone and bone fragments recovered from Lots V, VI, and VII, were partially or fully covered in red pigment. The presence of pigment on such a limited number of bones suggests some type of special treatment. Deposits of skeletal material are co-mingled throughout the cave, so the analysis of these 27 bone fragments may reveal relationship between the movement and redeposition of bone along the documented ritual circuit in the cave. Exploring the use of red pigment in cave contexts becomes particularly interesting as caves are seen as important sacred landscape features which house the gods, are the source of rain, and places from which people first emerged into the world.

Marreiros, João [170] see Bicho, Nuno

Marrinan, Rochelle (Florida State University)

[133] *Vertebrate Fauna from the Grand Mound Shell Ring site (8Du1), Florida*

The Grand Mound Shell Ring (8Du1) is a Mississippian-period site on the southern end of Big Talbot Island in Duval County, Florida. The site consists of an annular shell midden, composed primarily of oyster, with a sand burial mound deposited over the western ring arc. Excavations by faculty of the University of North Florida recovered a large vertebrate faunal sample marked by the presence of numerous avian species, some of which today are extinct. This paper presents the vertebrate faunal data recovered from a trench excavated through the south ring arc with special attention to the avian fauna and avifauna from other Mississippian-period coastal sites in the region.

Marrinan, Rochelle [133] see Parsons, Alexandra

Marsaglia, Kathleen [41] see Lawrence, John

Marsden, Susan [132] see Ames, Kenneth

Marsh, Anke [257] see Holt, Emily

Marshall, Amanda (Kleanza Consulting) and Stephanie Huddelstan (Kleanza Consulting Ltd.)

[124] *Culturally Modified Trees of the Pacific Northwest: How Do We Define What is Protected and Not Protected Under the HCA in British Columbia*

In British Columbia, archaeologists are challenged with the task of identifying and recording Culturally Modified Trees (or CMTs) with some live trees dating back to the early seventeenth century. How these features are recorded as archaeological sites, are guided and managed by the BC Archaeology Branch under the Heritage Conservation Act (HCA). This provincial ministry is constantly changing departments, and sometimes change how they would like archaeologists to inventory and manage CMTs. Up until recently, archaeologists recording these features would document and include all CMT features in a cluster as one 'site,' regardless of age, with varying feature types and ages, and a site was considered to represent continuous use of the landscape over time. More recently, the direction from the Archaeology Branch has been to not include CMTs that are more recent than A.D. 1846 in the recorded site boundaries, unless they happen to fall within the cluster of the pre A.D. 1846 features. Our paper will discuss the implications of this current direction, and how this potentially affects First Nations and their rights and title to the land.

Marsteller, Sara (Arizona State University), Kelly Knudson (Arizona State University), Gwyneth Gordon (Arizona State University) and Ariel Anbar (Arizona State University)

[135] *A Bioarchaeological Approach to Ychsma Regional Interactions: Stable Oxygen and Radiogenic Strontium Isotopes and Late Intermediate Period Mobility on the Central Peruvian Coast*

Archaeological and ethnohistoric evidence indicates that, for the Inca Empire and the Spanish Viceroyalty, the Rimac and Lurin Valleys on central Peruvian coast served as a key regional hub for religious and administrative activities. The nature of regional interactions prior to Inca imperial influence in this area, however, remains unclear. Well-known historical narratives claim populations from the adjacent Huarochirí highlands defeated coastal Ychsma populations for agricultural land, but archaeological evidence concerning the timing and extent of coastal-highland interactions is a source of debate. Here, we assess the potential for radiogenic strontium and stable oxygen isotopes to shed light on the regional mobility of coastal Ychsma groups during the Late Intermediate Period. We analyzed regional environmental baseline samples and archaeological human tooth enamel and bone samples from 113 individuals buried at Armatambo and Rinconada Alta, in the lower and lower-middle Rimac Valley, for radiogenic strontium and stable oxygen isotopes. Results reveal a broad isotopic range for the region likely due to diversity in water and bedrock sources. Nevertheless, one individual presents a non-local strontium value indicating mobility to an outside region. Complications for using isotopes to assess mobility in the Central Andes are discussed and future directions for research are proposed.

Marston, John (Boston University)

[184] *Wheat and Barley Morphometrics: A New Method for Quantifying Ancient Cereal Varietals*

Free-threshing wheat (*Triticum aestivum* and *T. durum*) and barley (*Hordeum vulgare*) were staple cereal crops in the ancient Near East. Although modern varietals of these species have significant variation in growing times, water requirements, and grain yields, few studies have distinguished varietals in the past. Traditional approaches have used grain seed size and shape to identify different crop varieties. These coarse metrics, including length:breadth and thickness:breadth ratios, give only a cursory understanding of ancient variation in seed shape. A recent method uses multidimensional analysis of grain morphometrics (GMM) to refine differences in shape that are poorly distinguished by basic measurements; this approach has considerable potential for adding nuance to discussions of cereal farming in the ancient Near East.

We present both basic measurements and multivariate GMM analyses of more than 1,000 complete wheat and barley grains from the site of Gordion in central Turkey, occupied from the Early Bronze Age (ca. 2500 B.C.E.) to the Medieval Period (ca. fourteenth century C.E.). We compare these data to grain measurement analysis from contemporaneous sites across the Near East to shed light on regional agricultural practices, and develop a comparative perspective on the value of seed morphometrics for reconstructing Near Eastern farming systems.

[19] *Discussant*

Marston, John [149] see Pio, Kayla

Martin, Alexandra

[18] *The History and Future of Ceremonial Stone Landscapes of Southern New England*

Indigenous people have lived on and moved throughout the landscape of southeastern New England for thousands of years. Today, representatives from several Tribal Historic Preservation Offices are interested in identifying and protecting ceremonial stone groupings that are significant elements of ceremonial landscape sites, ties to which were in many cases severed by colonial law. These sites are important loci of Indigenous history, inter-Tribal ceremony, and collective memory. This presentation draws on my dissertation research, which examines ceremonial stone features and sites that represent the ancestors' attempts to gain harmony with the Earth, her children of the nations of crawling, flying, walking, swimming, stone, and plant, and her celestial relatives. Historic sources, oral traditions, and ethnographic accounts, along with GPS and Geographic Information Systems (GIS) have been used to "let the landscape speak," presenting spatial data for preservation and the reestablishment of Tribal connections to ceremonial places.

Martin, Debra (University of Nevada/Las Vegas)

[215] *The Poetics of Corpse Fragmentation and Processing in the Ancient Southwest*

The bioarchaeological record in the ancient southwest has an abundance of evidence of disarticulated remains to suggest a long history of body (corpse) processing and fragmentation. From A.D. 800 to the 1500s, various assemblages of processed human remains have been recovered. Published studies of these have argued for a wide range of motivations that could account for such assemblages including anthropophagy/cannibalism, massacres, torture, witch executions, ritualized violence, warfare, raiding, and captive-taking. Using a fine-grained bioarchaeological approach to re-imagine the diverse actions taken by the living as related and connected, a different set of motivations emerges. Using a poetics of violence approach (as imagined by Neil Whitehead) provides a different way of thinking about these disparate bone assemblages. Moreover, identifying culturally-specific patterns related to age,

sex, and social status provides an increasingly complex picture of early small-scale groups. Some forms of cultural violence have restorative and regenerative aspects that strengthen community identity. Bioarchaeological data can shed light on the ways that violence becomes part of a given cultural landscape. Viewed using a poetics framework, the dismemberment and disarticulation of bodies can be seen as constitutive of social relations and identities and not of cultural rupture, violence and chaos.

[24] Discussant

[215] Chair

Martin, Paul [37] see Johnston, Cheryl

Martin, Alexander (University of Pittsburgh)

[97] *Preliminary Results from "the Role of Religious Institutions in Pre-Columbian America Data Analysis Project"*

The past couple of decades have seen a marked rise in behavioral and social science research from evolutionary psychologists, sociologists, and anthropologists looking to clarify what motivated the development and spread of religious institution throughout the world. These approaches tend to highlight the functional "prosocial" role that religion played in social development, citing its character as an integrative social device, as mitigator of external social stress, or as an enforcer of more efficient, cooperative, or regulatory social norms. Behavioral scientists frequently attempt to support these claims by testing them against present-day populations, but archaeology can talk directly to this discussion since its subject matter is explicitly the development of human behavior and its institutions over time, and its methodological tools were purposefully designed to investigate that topic through the long developmental sequence that behavioral scientists try to infer about based on modern test subjects. This presentation gives preliminary results on a multi-year data analysis project that explores how religious institutions evolved in various precolumbian societies to validate or reject different prosocial explanations for the role of religion in human social development.

[97] Chair

Martin, Paul (University of Memphis - Department of Earth Sciences) and Blair Tormey (Western Carolina University - Program for Development)

[187] *To Dig or Not to Dig? A Case Study of Suspected Remains Buried under Concrete*

Ground-penetrating radar (GPR) results can factor into the decision to excavate in the search for a clandestine grave. Most published research and case studies focus on the successful location and recovery of human remains, while relatively few examples have been published showing negative results. This presentation highlights a cold case where the data interpretation led to excavation, but did not produce the target sought.

Information from a confidential informant led investigators to question if patched concrete areas in the floor of an abandoned warehouse concealed the remains of a missing person. After a cadaver dog search resulted in no trained final response, investigators requested that a GPR survey be conducted. Using a 250 MHz GPR antenna configured on a cart, a potential target was identified during the survey. After post-processing the data, a target area was identified beneath the concrete, with a size, shape, and radar velocities consistent with a potential human burial.

The decision was made to excavate and, unfortunately, failed to yield remains. Using this example, we examine the technical, ethical, and moral decisions that must be carefully considered when utilizing GPR in the search for clandestine graves.

Martin, Andrew (Principia College)

[247] *Prehistoric Conflict Resolution: Archaeology's Unique Position to Address Today's Problems*

At the geographical interface between two cultures or worldviews, there are often found a hybrid or unexpected set of burial practices that mix ideas from each culture. This is the case for numerous prehistoric and historic cultures including the North American Hopewell and British Early Bronze Age, which will be examined here. However, if we look closely at these instances, there exists much more than just a borrowing of ideas. Amalgamations are often accompanied by acts of violence, destruction of each other's tombs and use of each other's traits in very different ways, before differences are resolved through amalgamation. These conflicts and the resulting resolutions appear to be the catalyst for subsequent changes to the overall culture.

One lesson from the Islamic destruction of temples and religious sites is that people outside of the Western world give far more importance to religion than us. In a similar way, prehistoric religious conflicts illustrate the stark difference between modern and non-modern views of religion. They also provide a unique opportunity to examine how religious conflicts were resolved. This paper will examine several conflicts, their resolutions and what they mean for a conception of non-modern religion, as explored in my book "Archaeology Beyond Postmodernity."

Martin, Simon (University of Pennsylvania Museum)

[256] *At the Heart of the Serpent: Archaeology, Epigraphy, and Iconography at Calakmul, Campeche, Mexico*

The metropolis of Calakmul has a pre-eminent place in Classic Maya history that is best understood from a multi-disciplinary perspective, combining the study of its extensive archaeological remains with that of its monuments, both in terms of inscriptions and imagery. This paper focuses on a 100-year span, from the seventh and eighth centuries C.E., which covers the reign of three of its best-known rulers. Representing the highpoint of the Snake kingdom's "international" influence, this small slice of Calakmul's story shows how political success was manifested in the monumental display of a major Maya capital.

[256] Discussant

[256] Chair

Martindale, Andrew [132] see Ames, Kenneth

Martindale, Andrew (University of British Columbia), Kenneth Ames, Bryn Letham, Kevan Edinborough and Sarah Wilson

[132] *Midden Accumulation Rates in Prince Rupert Harbour: New Applications for Percussion Coring*

The monumentality of the anthropogenic landscape of the Prince Rupert Harbour region on north coastal British Columbia has long been recognized for the number, density, and size of the shell midden terraces containing villages dating to the last 5,000 years. The scale of the region's archaeological record makes regional assessments of the mode and tempo of shell-bearing site construction difficult. We report on a program of regional and site-specific

percussion coring combined with 14C dating to evaluate patterns in accumulation rates of shell-bearing components in the anthropogenic terraces of major village sites. Specifically, we examine accumulation rates as measures of volume/year in the stratigraphic column. We compare these results against Bayesian modeling of 14C dates and other archaeological and historical indicators to assess major stanzas in settlement history in the region in terms of monumental site construction.

Martindale Johnson, Lucas [179] see Marino, Marc

Martindale Johnson, Lucas (University of Florida) and Lisa M. Johnson (University of California, Berkeley)

[179] *A Materialist Perspective on Ancient Maya Flaked Stone Technology: Chert Blade-Core Artifacts from Caracol, Belize*

Using a recently analyzed lithic deposit, from Caracol, Belize, this paper considers ancient Maya crafting from a materialist perspective. Through this perspective, we consider Caracol's chert technology not as separate and distinct from obsidian, implicating a separate community of crafters, somehow less prestigious or knowledgeable, but rather, we argue that similarity in material properties enabled the utilization of identical reduction techniques. Those techniques in crafting were shared across both obsidian and chert material, suggesting that crafting communities were not restricted to material type. Through the chaîne opératoire analytical approach, we have learned that crafters at the Classic Period Maya (A.D. 250–900) site of Caracol, reduced and shaped local chert using identical techniques to that of obsidian production, specifically, blade core technology. This realization, and the juxtaposition of this large chert deposit in the same context of like numbered obsidian artifacts, has prompted a reassessment of common assumptions regarding the distinction between obsidian and chert, both as status symbols and as valuables. For the ancient Maya of Caracol, it appears that chert and obsidian were both regarded similarly, as utilitarian and ceremonial alike.

[179] *Chair*

Martinez, Desiree (Cogstone Resource Management)

[5] *Discussant*

Martinez, Gustavo [16] see Gutierrez, Maria

Martinez, Marco

[64] *Ceramic Analysis of Site 291, A Historic Casas Grandes Site*

Casas Grandes is an archaeological prehistoric site located in the state of Chihuahua, northwest Mexico. The region's chronology remains unclear, with knowledge gaps between its time periods. One of these gaps includes the possible social configurations after the collapse of Casas Grandes. This research aims to provide new data obtained from the analysis of the ceramic assemblage of an archaeological site whose architecture seems to linger between late Casas Grandes and Spanish. This site, 291, is located just a few kilometers north of the main Casas Grandes site, Paquimé, and it is immediately surrounded by small neighboring sites. Like its neighbors, 291 is small and was located over a terrace overlooking the floodplains of a local arroyo and spring. Most of the ceramic sherds found on site are, apparently, Casas Grandes plainware, and interestingly, radiocarbon dating for 291 delivered dates as early as the 1600s. This paper provides preliminary results of the contrast between the composition of the plainware ceramics from sites 291 and the Medio Period site 204, to observe if their respective manufacture process changed over time, if they're similar at all, and provide a discussion regarding the nature of such change and the questions this might yield.

Martinez, Eva

[163] *Chichicaste Ceramics and Regional Interactions in Eastern Honduras*

Although the ceramics of eastern Honduras have been sometimes described as being remarkably homogenous throughout the region, recent research points to intraregional variations regarding ceramic assemblages and what they represent in terms of intra and inter regional interactions. The identification of the ceramic group known as Chichicaste has contributed to point out a greater diversity of ceramic traditions in eastern Honduras as well as to recognize more nuances in its intraregional interactions. Our ceramic analysis from the Jamastrán Valley, in southeastern Honduras, brought to our attention the importance of keep looking for a finer understanding of Chichicaste ceramic's role in terms of interactions within eastern Honduras and other neighboring areas. Ceramic groups of the Chichicaste Polychromes seem to represent a stylistic tradition that extends from western Honduras (Cancique Bichrome and Polychrome and Sulaco Polychrome), Nicaragua (Caucafi Rojo Sobre Naranja), and El Salvador (Machacal Purple Painted). This paper deals with a re-examination of interactions among some archaeologically known areas within eastern Honduras; it also attempts to explore, albeit superficially at this point, the relationship among communities in southeastern Honduras and northern Nicaragua.

Martínez, Andrea [259] see Pavlovic, Daniel

Martínez, Valentina L. [205] see Garzon-Oechsle, Andres

Martínez Lara, Mario (UNAM)

[136] *Cacaxtla en el devenir histórico mesoamericano: una propuesta desde sus expresiones plásticas*

El sitio arqueológico de Cacaxtla es famoso por la pintura mural y la importancia que ésta tiene como fuente de información para el entendimiento del desarrollo prehispánico de la región. Sin embargo, esta expresión plástica en particular es la que mayor atención ha recibido y en ocasiones se desarticula de aquellas hechas en otros materiales como la cerámica o la lítica encontradas en el Gran Basamento y en su periferia. En ese sentido, esta ponencia tiene como objetivo exponer la necesidad de realizar una tipología estilística que las conjunte y así, poder vislumbrar las variaciones artísticas como pistas sobre aquellos cambios y continuidades que se suscitaron durante el desarrollo socio-histórico del sitio. Reconocer estas variaciones y permanencias nos permite comparar la tipología estilística de la región con otras presentes en sitios arqueológicos que le fueron contemporáneos y detectar ideologías compartidas, reinterpretadas o propias y así, coadyuvar a reflexionar sobre la cronología del sitio y también a la comprensión del papel de Cacaxtla en el devenir histórico mesoamericano.

[136] *Discussant*

[136] Chair

Martínez Rojo, Iziar (Escuela Nacional de Antropología e Historia (ENAH)) and Verenice Heredia (El Colegio de Michoacan, A.C.)

[169] *From Second Tier to First Tier: Cerro Topiltepec in Light of New Research*

Recent excavations at Cerro Jazmín, a first tier center in the Mixteca Alta, Oaxaca, indicate that this center's main occupations were during the Early and Late Ramos phases and not during the Early Las Flores phase as it was previously established. These new data change our perspective on Cerro Topiltepec, a putative secondary center in the Nochixtlán Valley, and its role in the region during the Early Las Flores phase. In this paper, we analyze the changing political landscape in the Nochixtlán Valley and the status of Topiltepec within it by looking at multiple scales of analysis. First at the regional level (Central Mixteca Alta), second at the sub-regional level (Nochixtlán Valley) and third at the center itself. We conclude by talking about the scale of politics during the Early Las Flores phase in general in light of new research.

Martínez Tuñón, Antonio (SUNY-Albany)

[169] *Construyendo Estatus. El urbanismo emergente visto desde una unidad doméstica de élite*

Las excavaciones de Cerro Jazmín se han enfocado en distintos sectores de la ciudad con funciones diferenciadas que nos ayudan a comprender los procesos del urbanismo emergente en la Mixteca Alta de Oaxaca. En esta ponencia me concentraré en una unidad doméstica excavada en la Terraza 131. La ocupación de esta terraza se ubica entre 262 A.C. y 273 D.C. En esta terraza los materiales cerámicos indican el acceso a bienes foráneos, en particular de tipos grises característicos de Monte Albán. Además se logró identificar un área de producción lítica que nos habla de las estrategias económicas de sus residentes. Nueve entierros excavados en la terraza muestran una gran diversidad en el tratamiento funerario y condiciones de salud de los habitantes. A partir de la evidencia arquitectónica, es posible reconstruir una secuencia de construcción, remodelación, colapso, y reutilización de distintas partes de la terraza. El conjunto de esta evidencia sugiere que el surgimiento de la sociedad urbana fue un periodo no exento de tensiones, en el que la estratificación social y el estatus hubo de construirse paso a paso, y piedra sobre piedra con algunos derrumbes de por medio.

Martínez-Cruzado, Juan, Juan Ortiz-Aguilú (Universidad Técnica de Manabí, Portoviejo, Ecuador), Jennifer Raff (University of Kansas), Andrés Príncipe and María Nieves-Colón (Arizona State University)

[160] *Ancient mtDNA: Both Amazonian and Andean Migrants in Western Puerto Rico by Late Saladoid Times*

The Machuca archaeological site in western Puerto Rico is found in the Añasco river flood-plain, next to one of the presumed ancient mouths of the river, less than half a kilometer east of the shoreline. The first burial was found in a fetal position together with ceramic remains of the Late Saladoid or Cuevas period. Radiocarbon dating on bone collagen placed the burial at A.D. 550 to 660 (2-sigma calibration) whereas that on charred material found inside one of the pots placed it at A.D. 650 to 780. DNA extracted from the first cervical vertebra produced a sequence from three overlapping mtDNA segments spanning the whole HVR-I identical only to one described from a modern northern Amazon Brazilian, closely related to clade D1g2a. MtDNA obtained from a tibia of a second burial found in a similar ceramic context approximately 40 meters from the first produced sequences from two non-overlapping HVR-I segments. The sequences obtained strongly suggested it belonged to haplogroup A2 and that it was closely related to modern haplotypes described only for the Colombian highlands. In summary, results suggest South American migrants from both the Andean and Amazonian regions had arrived to western Puerto Rico by late Saladoid times.

Martini, Sarah (Harvard University)

[118] *The Space Between: An Investigation of the Changing Occupied Landscape at the El Brujo Archaeological Complex, Chicama Valley, Peru*

Here, I present the results of a systematic surface survey investigating cultural development on the geological terrace of El Brujo in the Chicama Valley, Peru. Previous research has shown that this one square kilometer space contains over 5,000 years of occupation encompassing the early preceramic through Colonial periods. Based on survey and excavations that include nucleated architecture, archaeologists have assumed a general northern movement of consecutive occupations, with each new group choosing to abandon the previously occupied area. I have tested this model by combining data from such previous research with the results of my systematic surface survey of the "intermediate" areas located between architectural nuclei. Through a visualization of the densities of materials and their characteristics in ArcGIS, I analyze the spatial distribution of periods of occupations and, subsequently, the types of occupation each period represents. The results of this process reflect changes in the management of space caused by the existence of prior occupations on later occupations, allowing a discussion of new issues such as the creation and continuity of "places" of particular significance.

[118] Chair

MARTINI, SARAH [118] see Tavera Medina, Ana Carito

Martínón-Torres, Marcos [173] see Li, Xiuzhen

Mar'yashev, Alexei [134] see Hermes, Taylor

Mascarenhas, Shannon (University of Toronto) and Steve Kosiba (University of Alabama)

[209] *Style and Substance in the Inca Imperial Capital: A Preliminary Archaeometric and Attribute Analysis of Ceramics, Materiality, and Aesthetics in Ancient Cusco*

Archaeologists have long examined how ancient empires and states developed a standard aesthetic and material culture—a set of styles and iconographic designs meant to express their claims to regional authority. In contrast, this paper moves beyond style designations and iconographic interpretations, which often draw on texts to make claims about representations of myths and political personages, to instead understand the materials and technological sequences that constituted a regional aesthetic from the ground up. It analyzes Inca and pre-Inca (Killke) pottery from Cusco, Peru, to provide preliminary insights into how changes in clay resources and technological sequences contributed to the creation and dissemination of the aesthetic that defined the Inca Empire (ca. 1450–1532 C.E.). Archaeometric (LA-ICP-MS) and macroscopic attribute analyses reveal patterned relationships between clay resource procurement, decorative motifs, and vessel forms among a sample of pre-Inca, Killke, and Classic Inca polychrome serving vessels. The data complement recent studies from Cusco, which indicate that specific, valued raw materials were important constituents of the Inca imperial aesthetic. The study contributes to a growing body of archaeological research that complements a traditional focus on stylistic design with a nuanced understanding of the

materials that constituted a regional aesthetic.

Maschner, Herbert (University of South Florida)

[4] *Virtualization, 3D Technologies, and the Democratization of Archaeological Research*

The promise of the information age is access to data. Advances in online data availability have permeated nearly every scientific and humanities field providing access to unprecedented quantities of research materials. But the key missing element in archaeological (and paleontological research) is access to the material remains that are key to investigating the past. Because of logistical barriers, conservation concerns, conditions of ownership, or other factors limiting access, many of the most important collections are unavailable for study. New developments in 3D scanning, visualization, and database development have made the concept of virtual repositories, complete with on-screen analytical tools, a viable option. New projects in North America, the Arctic, and across the Mediterranean are transforming the analysis of material remains by participating in the global Democratization of Science Project. This project aims to put entire collections online in the form of virtual repositories so that anyone, anywhere, can conduct their own analyses and create their own results. Here, new methods of virtualization and new on-screen analytical tools are presented.

Mason, Robert [199] see Matheson, Carney

Mason, Owen (INSTAAR University of Colorado), James Jordan (Antioch Graduate School NE) and Shelby Anderson (Portland State University)

[217] *The Giddings' Legacy of Beach Ridge Archaeology in Alaska: A Proxy Record of Late Holocene Climate*

Beach ridge archaeology developed as a relative-age archaeological survey method in the late 1950s within Kotzebue Sound. Giddings' breakthrough collaboration with geologists David Hopkins and George Moore focused on Cape Krusenstern, defining 5,000 years of prehistory from the Denbigh complex to Thule tradition, dated mostly by reference to the type site at Onion Portage and 14C ages mostly on Old Whaling and Ipiutak and Thule occupations, but none on Norton or Denbigh. The onset of beach ridge deposition co-occurs with the stabilization of sea level ca. 5,000 yrs B.P. Abundant sources of mobile sand or gravel form beach ridges at depositional termini of long shore transport and are often ornamented by dunes, as at Cape Espenberg. Our geoarchaeological research since 1986 includes >300 14C ages to define coastal evolution, expanding the record from Norton Sound to Point Barrow, establishing that heightened storminess prevailed between 1200 and 1000 B.C. and A.D. 800 to 1200. Research at Cape Krusenstern validates some of Giddings' original chronological inferences but provides a more detailed age model of the foreland's evolution, especially in the older record and has refined the chronology of Norton and Thule occupations and produced firm ages on the Denbigh sequence.

Massey, David (Indiana University - Bloomington) and Alex Elvis Badillo (Indiana University - Bloomington)

[237] *Archaeological Prospecting using Remote Sensing Techniques in Quiechapa, Oaxaca, Mexico*

While aerial photography is still widely used for the "brute force" identification of archaeological sites, multispectral remote sensing approaches hold the greatest potential for archaeological surveys because of their ability to detect hidden or subsurface archaeological remains. This poster examines Quiechapa, a small rural municipality located in the foliage covered mountains in the southwestern state of Oaxaca, Mexico, which has never before been studied by archaeologists and likely contains many overgrown or buried architectural remains. We will use ERDAS Imagine to identify anomalies within vegetation, moisture, and soil spectral signatures in Landsat imagery for further field investigation. Results are currently being verified using through a regional archaeological survey.

Masson, Marilyn (University at Albany SUNY), Carlos Peraza Lope (Centro INAH Yucatan), Timothy Hare (Morehead State University) and Bradley Russell

[26] *Rural Economies at Agrarian Houselots Before and After the Rise of Urban Mayapán*

This paper examines wealth and occupational diversification of rural houselots of the Terminal Classic and Postclassic northern Plains of Yucatan. Eight dwelling groups are compared that were situated in different types of rural/peripheral contexts. Ubiquitous Terminal Classic dwellings in the study area were located at the margins of a modest town (the Rank IV center of Tichac/Telchaquillo) far from cities of any size or political significance. In contrast, Postclassic houses were within 1 or 2 kilometers of Mayapán's city wall, with their economies potentially linked to the needs of the largest urban capital of the Maya realm and enhanced opportunities for exchange. Significant differences are observed in the household economies of urban versus rural Postclassic houses in the quantity, value, and diversity of debris. Rural houses of both periods exhibit low indices of wealth and productive diversification. All houses exhibit long term occupations and investment in architecture suggestive of permanent occupation, challenging views that low artifact densities equate with seasonal farmsteads. The implications of these findings contribute to understanding the role of peripheral and agrarian populations in regional political economies of northern Yucatan.

[59] *Chair*

Mata-Miguel, Jaime [64] see Battillo, Jenna

Mateus, Jorge and Rita Scheel-Ybert (Museu Nacional, Universidade Federal do Rio de Jan)

[49] *Phytolith analysis in Sernambetiba shell mound, Rio de Janeiro, Brasil.*

Phytoliths are an important evidence for archaeology to address the behavior of ancient human societies, specifically their relation with botanical contexts. As with any other archaeological material, it is important to assess the preservation of these silica structures, understanding the process of degradation and dissolution that affects them. One of the factors cited in the literature as responsible for the degradation of phytoliths is the alkaline condition of sediments. Humid tropical conditions also have been indicated as aggressive for these structures. Archaeological tropical shell middens are good scenarios to explore the role that these conditions play in the phytoliths' preservation. In order to assess the behavior of these plant micro-remains in these conditions, we analyze four sediment samples from Sernambetiba, a shell mound located in the state of Rio de Janeiro. Here, we present the preliminary results of this analysis, the structures identified until now, and some conclusions about the behavior of the human group responsible for the deposition of the plant remains observed.

Matheson, Carney (Lakehead University), Cory Vickruck (Lakehead University), Chris McEvoy (Lakehead University) and Robert Mason (Royal Ontario Museum)

[199] *Ancient Explosives from Jerusalem Identified on the Analysis of the Mysterious Sphero-Conical Ceramic Vessels using Archaeological Chemistry*

Thick-walled small stoneware Sphero-conical vessels have been found throughout the Middle East between the tenth and fourteenth centuries. Researchers have proposed that these vessels could have been used as smoking pipes, grenades, or containers holding medicines, mercury, beer, or perfume. The unusual nature of the ceramic, being the only highly fired stoneware produced in the Middle East, together with the very thick walls, would indicate an unusually dedicated function that only existed between the tenth and fourteenth century. Although incendiary devices are well-known in this period, the properties of sphero-conical vessels would suggest an explosive function but there is actually no evidence for gunpowder in the Middle East at this time. However, all the components of gunpowder are well-attested, and it was certainly known in China. The ancient Middle Eastern weapon known as Greek Fire has been purported to contain many of the components of incendiary devices or explosives but none of these have any been confirmed or identified. Archaeological chemistry has been applied to a set of sphero-conical vessel fragments from the eleventh century, Jerusalem. The results of this research will be presented here and the interpretation of the analysis maintains the possibility of weaponry.

Mathews, Jennifer (Trinity University) and John Gust (University of California, Riverside)

[130] *Life is Bittersweet: The Rise and Fall of the Sugarcane and Rum Industry in the Nineteenth Century*

The nineteenth century in the Yucatán Peninsula was a period of major transition. Amidst the backdrop of colonialism, slavery, indentured servitude, and an indigenous revolt during the Caste War (1847–1901), foreign and local residents of the remote region of northern Quintana Roo engaged in small-scale commodity industries such as sugarcane farming and rum making. While workers dealt with harsh and dangerous conditions, they also had access to an unusual array of cosmopolitan luxury goods imported from the United States through coastal trade. This paper looks at the daily life of laborers living within the context of uprising and upheaval, within their small communities and across the region.

Mathews, Darcy (University of Victoria)

[132] *Monumental Stonework and the Making of Places and History on the Northwest Coast of British Columbia*

Archaeologists do not think of the peoples of the northwest coast as monumental stone builders, yet current research indicates that the enhancement and demarcation of critical resource sites entailed both the massive movement of stone and the building of stone monuments. The Coast Salish peoples built remarkable numbers of burial cairns and mounds, using stones cleared from important and valuable root crop fields to then inscribe the landscape with their ancestral dead. Their Heiltsuk neighbors to the north reshaped shorelines with stone constructions to promote the growth, accessibility, and predictability of their most economically important intertidal resources. Stone intertidal fish traps and boulder terraces promoted the growth and abundance of clams and other bivalves are common in their territory. These ubiquitous Coast Salish and Heiltsuk stone constructions are the intentional products of not only ecological management—the process of building these features was the very making of histories and places. The materiality of these monumental stone works are enduring and visible constructions that speak to emergent and changing practices of ownership, tenure, and relationships of power over the past three millennia.

Mathias, Errol [93] see Poister, Nicholas

Mathiowetz, Michael (Riverside City College)

[101] *Weaving Our Life: The Economy and Ideology of Cotton in Postclassic West Mexico*

West Mexican archaeologists long have noted that around A.D. 900 the material culture record in this broad region exhibits a pronounced increase in the presence of modeled ceramic spindle whorls, particularly along the Pacific coastal plain of Nayarit and south-central Sinaloa. Although limited evidence of cotton in this region is present in the Classic Period, the heightened cotton cultivation and consumption that seemed to accompany the dramatic social transformations in the Aztatlán culture during the Postclassic Period suggests that there were important political, social, economic, and ideological ramifications tied to its production and use. This presentation examines the ethnographic, ethnohistoric, and archaeological data on cotton cultivation, trade, and ritual use in order to better understand how this domesticated plant was valued by Aztatlán societies.

Mathwich, Nicole (University of Arizona), Alexander Ruff (University of Arizona) and Barnet Pavao-Zuckerman (University of Maryland)

[134] *Fodder and Water: Isotope Analysis of Livestock Enamel in Southwest Spanish Colonial Settlements in the Pimeria Alta*

The introduction of livestock to the Pimeria Alta in the eighteenth-century dramatically shifted resource use in the Sonoran Desert and the Santa Cruz River Valley. Colonial and indigenous politics and economics were transformed as a result of the presence and uses of these animals, but it is relatively unknown how O'odham people in the Santa Cruz Valley balanced the grazing and watering needs of livestock with the needs of farming and seasonal wild food gathering in the arid region. Using carbon and oxygen isotopes from sheep/goat and cattle teeth from four Spanish colonial sites in southern Arizona, we explore the environmental and social implications of animal management in the colonial period. Our preliminary data from bulk and serial enamel sampling suggest different seasonal watering and grazing regimes for sheep/goat and cattle herds. Seasonal shifts in plant communities and water evaporation reflected in $\delta^{18}\text{O}$ and $\delta^{13}\text{C}$ ratios may offer a limited proxy for O'odham labor and herd and resource management. This research connects isotope analysis methods most frequently applied to paleontological specimens to the reconstruction of recent historical landscape management and the social shifts initiated by colonial interaction.

Matisoo-Smith, Lisa (University of Otago)

[160] *Welcome to My Nightmare—Ancient DNA from Pacific Islands*

Recent reports of ancient DNA recovery from samples that are 10s if not 100s of thousands of years old attest to the amazing developments in aDNA technology in recent years. Unfortunately, most aDNA from the Pacific Islands is poorly preserved and highly degraded. Despite the relatively short history of settlement on many Pacific Islands, ancient DNA is often difficult, if not impossible, to obtain from archaeological samples recovered from Pacific sites. Still, we are able to recover aDNA sequence from an increasing number of animal and human samples from across the Pacific, which are providing intriguing clues about the complexity of Pacific settlement history. Several examples from our lab will be presented, demonstrating both the powers and the pitfalls of working with ancient DNA in the Pacific and integrating aDNA data with the archaeological record to reconstruct aspects of Pacific settlement and prehistory.

Matney, Timothy (University of Akron), Sarah E Travalay (University of Akron), Linda R Barrett (University of Akron) and David S Perry (University of Akron)

[197] *Detecting and Characterizing Archaeological Deposits Using In Situ Shallow Subsurface Spectroscopy*

Geophysical prospection is now a common field technique employed by archaeologists across the globe. Likewise, chemical analyses of soils, residues, and other samples in laboratory settings have been part of archaeological research for decades. This paper examines a new technique, still in an experimental phase, which allows archaeologists to refine the results of geophysical surveys by conducting chemical characterizations of deposits in situ using shallow subsurface spectroscopy. A near infrared and visible light diffuse reflectance spectrometer is employed via a truck-mounted push-probe system to collect spectra with signatures characteristic of archaeological features and distinguishable from background spectra. This paper reports on results of a pilot study conducted at two Native American settlements in Kansas and the results of bench tests to determine the ability of NIR and VIS spectroscopy to discern the presence of fatty acids, similar to those found in human burials, in various concentrations and soil types. Finally, the potential uses and limitations of this emerging technology are discussed.

Matsumae, Hiromi [147] see Karsten, Jordan

Matsumoto, Mallory (Brown University) and Misha Miller-Sisson (University of California, San Diego)**[20]** *Visualizing Death: Representations of Death and Rebirth on an Early Classic Maya Mid-Level Elite Burial Vessel from Uxul, Mexico*

Excavations during the 2014 field season at the Maya site of Uxul in Campeche, Mexico, revealed an Early Classic ceramic burial vessel that was embellished with hieroglyphic elements and contained an infant skeleton. The hieroglyphic elements on the vessel body and lid visually represent the underworld and feature components of larger phrases that are used in Classic Maya monumental and ceramic texts to record processes of death and renewal. The occurrence of both iconographic and hieroglyphic elements on the vessel to refer to the deceased's passage into the underworld and eventual rebirth indicates the importance of both concepts in the Classic Maya funerary complex. The discovery of the vessel under the base of a mid-level elite structure in an architectural group associated with ritual functions suggests that this social stratum had access to literacy and utilized it in complex ritual behavior. Furthermore, the vessel offers yet another example of the interface between iconography and hieroglyphic writing in Classic Maya culture. It is anticipated that this research will inform future Classic Maya studies of mid-level elites, including the roles that they fulfilled within the settlement, and the symbolism underlying their material culture.

Matsumoto, Yuichi, Jason Nesbitt (Tulane University), Yuri Cavero (UNMSM) and Edison Mendoza (PUCP)**[31]** *Ceremonial Center and Domestic Rituals: The Case of Campanayuc Rumi, South-Central Highlands of Peru*

The main theme of this paper is to reconsider the relationship between the ritual activities in public architecture and domestic rituals carried out in the area outside of ceremonial core through the recent data of Campanayuc Rumi, a late Initial Period and Early Horizon ceremonial center in the Peruvian south-central highlands.

New data from the domestic areas of Campanayuc Rumi suggest that ritual activities had been carried out before the construction of public architecture. While the domestic rituals were maintained, they seem to have been separated from those of the public architecture during the late Initial Period (the Campanayuc I Phase: 1000–700 cal. B.C.). However, in the Early Horizon (the Campanayuc II Phase: 700–500 cal. B.C.), they got more integrated into those of the public architecture. This change occurred in accordance with the adoption of hierarchical social organizations at the site, and thus possibly related to the strategies of emerging elite class.

Matsumoto, Go (Southern Illinois University Carbondale)**[57]** *A compositional Signature of Multi-Craft Production?: Food Vessels from Great Plaza of Huacas de Sican*

This paper discusses the results of a recent compositional analysis by INAA of 225 samples of ceramics sherds excavated from the Great Plaza of Huacas de Sican. The analysis revealed a limited number (3) of compositional groups and a high rate of arsenic and uranium in one group. The author argues that the high rate of arsenic indicates the side-by-side production of arsenical copper and ceramic vessels and that the vessels used at the Great Plaza were produced at the regional ceramic workshop of Huaca Sialupe in the Lower Lambayeque Valley, known for its multi-craft production of metals and ceramics.

Matt, Ira [191] see Yu, Pei-Lin

Matthiesen, Henning [210] see Hollesen, Jørgen

Mattson, Hannah [66] see Kerr, R. Stanley

Mattson, Hannah (University of New Mexico)**[194]** *Directionality in Ceramic Vessel Construction and Ceremonial Circuitry in the Ancestral Pueblo World: A Case Study from Pueblo Bonito*

This paper explores the relationship between utility ware vessel construction and widely shared elements of cosmology in the Chaco interaction sphere through an examination of corrugated gray ware ceramics from Pueblo Bonito. The direction of coiling, which is inversely related to the angle of corrugation or pinching, appears to be a conservative element of ceramic technological style and is typically consistent within regions. As these differences cannot be accounted for by handedness alone, it has been proposed that coiling direction may be related to directional symbolism. Based on an analysis of over 11,000 indented corrugated gray ware sherds from the Pueblo Bonito middens, Cibola, Chuska, and Tusayan wares are found to exhibit primarily counterclockwise coiling, while Mesa Verde wares exhibit a significantly higher proportion of clockwise coiling. These results indicate that directionality in vessel manufacture is neither randomly distributed nor tied to specific production units, but instead may be associated with longstanding traditions of ceremonial/professional circuitry across the Ancestral Pueblo area.

[194] *Chair*

Mauck, Jessica [245] see Burnett, Katherine

Mauricio, Ana Cecilia [118] see Kelley, Alice

May, Rossana (Cinvestav), Tomás Gallareta (Centro INAH Yucatán) and William Ringle (Davidson College)

[127] *Boundary Traits in Archaeological Settlements of the Bolonchen District, Yucatán, México.*

In the course of surveying a kilometer-wide strip linking the archaeological sites of Labna, Kiuc, and Huntichmul, several types of rare feature clusters were recorded that are difficult to interpret. Although some spatial patterns of these "special" features with respect to the local topography were recognized as the survey proceeded, it wasn't until the sample of 10 km² was completed and analyzed using GIS "least cost routes" that we were able to offer a more thorough interpretation of their functionality.

The importance of these elements is that they represent markers of settlement limits created by their ancient inhabitants, so they can lead us to interpretations about how built space was emically conceived and organized. These boundary elements seem to be related to the custody of borders, and the control of people and goods moving through the roads, although most probably they may also convey ideological meanings.

May Ciau, Rossana [127] see Seligson, Ken

Mayer, Aaron (University of South Dakota) and Matthew Sayre (University of South Dakota)

[19] *A Glimpse of Domestic Space at Tenahaha from the Cotahuasi Valley, Peru*

In the field seasons of 2004–2007, Justin Jennings and his field crew conducted archaeological excavations at the Middle Horizon (600–1100 A.D.) site of Tenahaha in the Coahuasi Valley of the Peruvian Andes. During 2013–2014 flotation samples from the site were analyzed in the Archaeology Laboratory at the University of South Dakota. The Tenahaha site contained five domestic areas from which macrobotanical data was collected and interpreted. It is believed that the Tenahaha necropolis was only periodically occupied during ritual and ceremonial events. This should be reflected in macrobotanical and domestic material remains. In this paper, Tenahaha is compared to other Middle Horizon sites and used to determine ancient food ways and other domestic activities in the region.

Mayewski, Paul

[1] *Discussant*

Mayle, Francis [167] see DeSouza, Jonas

Mazow, Laura (East Carolina University)

[252] *Weapon or Weaving Swords and the Complexities of Gender Construction*

The existence of weaving swords in the Bronze and Iron Age Levant is hinted at in both the textual and archaeological records. Furthermore, weaving swords as grave goods would fit the generally accepted pattern of weaving tools in association with female burials. Yet when swords have been found in graves with positively identified females, the deceased have been described as 'warrior women' or the burial reinterpreted so as to disassociate biological sex and gender. In recognizing the use of weaving swords in the Bronze and Iron Ages, we may find additional previously identified weapon swords whose form better fits a weaving function. In this paper, I argue that our lack of understanding of weaving technologies combines with our hasty and often uncritical assignment of gender categories to see a martial quality in all depictions of 'swords.'

[252] *Chair*

Mazzia, Natalia [139] see Flegenheimer, Nora

Mazzucato, Camilla [265] see Hodge, Christina

McAlister, Andrew [296] see Allen, Melinda

McAllister, Martin (ADIA) and Brent Kober (Northland Research, Inc.)

[187] *The Value of Forensic Archaeology Training for All Law Enforcement Officers: A Case Example*

Law enforcement officers working for agencies not directly involved in land management, such as county sheriff's departments, traditionally have not been trained to recognize evidence of crimes related to resource protection, for example, artifacts and human remains stolen in the commission of archaeological crimes. In a recent class presented by our firm and cohosted by the Lake County, California Sheriff's Department and two California tribes, sheriff's deputies and evidence technicians received training in the investigation of archaeological crimes and the forensic archaeology of identifying the evidence of these crimes. Two days after the training was completed, one of these deputies made contact with a suspect in a potential child abuse case. In a search of the suspect's vehicle, he found drugs and drug paraphernalia and also artifacts with cards possibly identifying the locations from which they were removed, evidence he would not have recognized earlier. The suspect has now been charged with violations of California's archaeological protection laws in addition to his drug related charges and the case has received considerable local and regional media attention due to its archaeological nexus. This illustrates the value of providing forensic archaeology training to all law enforcement officers.

McAnany, Patricia (University of North Carolina, Chapel Hill) and Maia Dedrick (University of North Carolina, Chapel Hill)

[26] *Rights to Land and Labor in Yucatán during Pre-Conquest and Colonial Times*

Land and labor are particularly integral to agrarian economies. The extent to which either is exchanged, sold, inherited, or privatized can shape the dynamics of hierarchy, habitation, and migration as well as exchange. The diverse perspectives on Yucatec possession of land—from assertions of private property to denial of property as a relevant concept—are reviewed for both preconquest and Colonial times. Relevant data include land plot demarcations,

historical documentation of land struggles, and Yucatec Maya linguistics. In reference to labor, evidence for the mobilization of work parties is examined across the time spectrum with attention to its materialization in the form of monumental architecture, large ceramic basins, and feasting debris. The manifestation of labor as tribute goods can be identified through extant tax records, patterns of trade, and the necessity of food imports. A historically and geographically contingent model of power over land and labor is offered for Yucatán.

McBride, Kevin [61] see Dezi, Gina

McBride, Kevin (University of Connecticut) and David Naumec (Clark University and Mashantucket Pequot Museum and Research Center)

[61] *Battlefields of the Pequot War (1636-1637)*

Conflict archaeology can offer a unique perspective into the nature and evolution of warfare in Native American and Euro-American societies in colonial contexts and how these societies shaped warfare and were in turn shaped by them. The Battlefields of the Pequot War Project, funded by the National Park Service American Battlefield Protection Program, seeks to move beyond documentation of battle-related objects associated with Pequot War battlefields and place the conflict in a broader cultural and historical context. The archaeology of the Pequot War provides a useful framework for understanding the nature and evolution of Pequot military, political, and social institutions in the early seventeenth century prior to their first encounters with European militaries. These conflicts involved thousands of combatants from dozens of tribes and communities across southern New England. The regional scope of these sustained conflicts, fought between large numbers of combatants for what appears to be control of territory, is not consistent with tribal scale conflicts between kin groups which had traditionally defined Native warfare in the region.

McBrinn, Maxine (Museum of Indian Arts and Culture, Santa Fe)

[63] *Marriage Patterns and Material Culture: A Pueblo/Fremont Test Case Using Basketry*

At various times, archaeologists have proposed that the Great Basin Fremont, who lived in Utah and nearby areas between A.D. 500 and 1250, were Pueblo colonists, a purely indigenous Great Basin development, intrusive Athabaskans, or something in between. Fremont material culture is generally not very different from that of their neighbors, except in a few cases. Four artifact categories distinguish the Fremont: rock art and pottery depictions of trapezoidal figures; grey coiled-construction utility pottery made using local materials; uniquely constructed leather moccasins; and one-rod-and-bundle coiled basketry. Fremont basketry is distinctly different from that of their contemporary neighbors and from the later Numic-speaking peoples who may have replaced them. One possible explanation for the suite of Fremont material attributes is a differential marriage pattern between Great Basin peoples and the Ancestral Pueblo, wherein only Pueblo men or Pueblo women married into Fremont groups. In our initial analysis to examine this hypothesis, we focus on basketry attributes and distribution.

[63] *Chair*

McBrinn, Maxine [265] see Montoya, Amy

McCafferty, Geoffrey [163] see Fernández-León, Elisa

McCafferty, Geoffrey (University of Calgary) and Shaelyn Rice (University of Calgary)

[163] *In Defense of Plainware Ceramics: Form, Function, and Foodways in Sapoia Period Pacific Nicaragua*

Plain, utilitarian pottery has typically been considered the 'red headed stepchild' of ceramic studies. This is especially the case in Pacific Nicaragua, where beautifully decorated polychromes have attracted the most attention. However, more theoretically engaged studies consider utilitarian pottery as a key to understanding foodways, and therefore offer important insights into alternative dimensions of social practice. This paper will consider plainware cooking and storage vessels from several sites along the shore of Lake Cocibolca in Pacific Nicaragua. Variations in form and orifice provide a starting point for discriminating between kitchen assemblages that vary across time and space, and can therefore distinguish food production across the cultural mosaic of a multi-ethnic landscape.

McCafferty, Sharisse (University of Calgary) and Geoffrey McCafferty (University of Calgary)

[234] *Camp Granada, the Next Generation: Recent Excavations at the El Rayo site, Pacific Nicaragua*

El Rayo, located on the Asese Peninsula in Lake Cocibolca, continues to surprise with its archaeological resources. Initially identified as a small fishing community on the lakeshore, investigations in 2009 and 2010 revealed extensive mortuary remains as well as rich domestic refuse. In the summer of 2015, a field school by the Institute for Field Research re-opened excavations at the Locus 3 mortuary complex, uncovering additional burial urns in diagnostic Sacasa Striated 'shoe-pot' urns. A second focus of excavation, however, discovered an unexpected example of monumental architecture on a low mound. A well-constructed stone foundation outlined a building measuring 20 x 10 m, with at least three layers of walking surface representing sequential modification. This poster will outline the new discoveries, with special emphasis on the architectural feature.

McCall, Grant [94] see Marks, Theodore

McCall, Grant (Tulane University)

[152] *Mesolithic Stone Tools and the Organization of Technology at Kenure, Ireland*

During the late 1950s, the avocational archaeologist Gwendoline Stacpoole collected a sizable assemblage of stone tools from farm fields along Ireland's east coast near the town of Kenure, Rush, County Dublin. Stacpoole worked in collaboration with G.F. Mitchell at Trinity College, Dublin, and the assemblage from Kenure was ultimately donated to the National Museum of Ireland. In the summer of 2014, I analyzed a considerable sample of Stacpoole's collection from Kenure and this paper presents the results of this analysis. This paper comes to three main conclusions: (1) I generally support initial assessments of the chronology of the assemblage as belonging to the late Mesolithic on the basis of formal tool typology; (2) the characteristics of the assemblage suggest a pattern of expedient knapping of locally available glacial till flints and cherts; (3) in spite of shortcomings concerning the provenience and chronology of the Kenure assemblage, it has much to offer our knowledge of Middle-to-Upper Holocene patterns of human economic

organization in eastern Ireland. I conclude by offering some directions for future research for this and other surface-collected lithic assemblages from along the County Dublin coastline.

[152] Chair

Mccarty, Rita (Mississippi National Guard)

[73] Discussant

McClung, Terry [64] see Slaughter, Mark

McClung De Tapia, Emily (IIA-UNAM MEXICO)

[129] *Prehispanic Landscape and Agriculture in the Teotihuacan Valley: The Tlajinga Área*

Archaeological evidence indicates occupation in the Tlajinga área of the southern Teotihuacan Valley throughout the Classic and Postclassic (ca. 200–1500 d.C.) as well as the Colonial Period. Excavations as well as soil profiles in this sector provide macro- and micro-botanical remains that, together with stable carbón isotope values ($\delta^{13}\text{C}$) provide new insights with respect to agricultural activities, conforming evidence for maize (*Zea mays*), and opportunistic flora associated with food production. A buried soil with vertic properties, overlying the tepetate substrate but situated approximately 1-1.5 m below the modern surface, is broadly distributed throughout the área and represents an important stratigraphic marker in the effort to trace dynamic processes in landscape transformation and human impact in the región through time.

McClure, Sarah B. [146] see Zavodny, Emily

McConnan Borstad, Courtney, Jane Kelley (University of Calgary) and M. Anne Katzenberg (University of Calgary)

[275] *Dietary Variation at Paquimé (Casas Grandes) and Convento Sites: Evidence from the Stable Isotope Analysis of Human Bone Collagen*

Paquimé (Casas Grandes), located in northern Mexico, is well known for its Medio period (A.D. 1200–1450) monumental architecture and the variation apparent in its mortuary practices. While previous bioarcheological studies have addressed a wide range of questions, dietary practices at Paquimé still remain largely unexplored. Stable isotope analysis of bone collagen is one technique that can directly reconstruct diets at Paquimé and identify differences between individuals, time periods, and sites.

Stable carbon and nitrogen isotope values were obtained from the bone collagen of 60 Medio period individuals from Paquimé and 14 Viejo Period (A.D. 900–1200) individuals from the nearby site of Convento. Isotopic data from the two are largely similar, indicating that both relied on C4 plants and fauna. However, some Medio period individuals have higher isotope ratios for both carbon and nitrogen. This suggests status differences, and these individuals are further considered with respect to other archaeological evidence. Comparisons to other contemporary sites within Chihuahua and to the American southwest place these results within a larger regional context. They show that Paquimé, while distinct in many ways, also conformed to many of the general dietary patterns typical of the time.

McCormick, David [212] see Meissner, Nathan

McCoy, Mark (Southern Methodist University)

[174] *Geospatial Big Data in Archaeology: Prospects, Problems, and How it Will Shape the Future of Archaeology*

Initial worries about the adverse effect the adoption of GIS would have on archaeology in terms of environmental determinism have proved to be unwarranted. Today, as spatial technology has evolved and become integrated into the discipline, we must rise to a new set of challenges posed by the sheer size and complexity of data we use and produce. Field survey and excavations regularly yield far more pieces of spatial information than ever before. At the same time, the amount of available satellite imagery, airborne lidar, and other remote sensing and environmental datasets increase in size and complexity. I discuss how we deal with geospatial big data—broadly defined as data sets that exceed the capacity of widely available hardware, software, and/or human resources. While my examples are mainly drawn from archaeological studies within Oceania, the goal of my presentation is to identify how the questions we ask and the conclusions we accept can be shaped by geospatial big data, regardless of study area.

McCoy, Mark [227] see Codlin, Maria

McCuistion, Ashley (Indiana University of Pennsylvania)

[36] *Spatial Analysis of the DuPont Powder Mill in Southwestern Pennsylvania*

Western Pennsylvania has long been recognized as a center for industrial development in the United States. While the region is best known for coal mining and steel production, numerous industries have developed and prospered in the area for centuries. The DuPont Powder Mill, located in Forbes State Forest in southwestern Pennsylvania, is a valuable resource for information on the black powder industry in western Pennsylvania and the individuals who worked in the mills during the late nineteenth and early twentieth centuries. Originally owned by the Laflin and Rand Powder Company, the mill is now a large complex of ruins within a state park near Fairchance, Pennsylvania. Preliminary results from a survey of this complex provide necessary data for inventory and spatial analysis of the site.

McCullen, Megan (Alma College)

[232] *Lithics as Evidence of Social Networks and Landscape Knowledge among the Western Wendat, 1670–1701*

The Western Wendat were refugees that fled their homeland villages in Ontario in 1649, and resettled in the western Great Lakes. This paper examines the lithic resources from their village at the Straits of Mackinac, inhabited from 1670–1701. Lithics can be indicative of multiple aspects of the resettlement process—particularly knowledge of local resources and strength of social networks. Results show that formal tools, excluding gunflints, tend to be made from cherts from the lower peninsula of Michigan, while informal tools and flakes are more commonly made of locally available beach gravels. Other lithic

resources (excluding European flints) are minimal. While many of the trade items associated with the fur trade appear to be heading east-west through this village, it appears that for functional items that are not desired by participants in the fur trade, ties to north-south networks are being maintained. Intrusive features at the site that allow for stratigraphic distinction further suggest that during later occupation the use of Bayport chert from the Saginaw Bay dropped, and emphasis was placed on Norwood chert from the Lake Michigan shore. This may be related to shifts in social networks and community identity over the 30-year occupation of the village.

McCurdy, Leah [40] see Williams, Justin

McCurdy, Leah (University of Texas at San Antonio)

[119] *Maya Monumental Energetics*

Inspired by the important development of architectural energetics methodologies in Maya studies, I explore current research concerning monumental construction practices and labor at the ancient Maya site of Xunantunich, Belize. I discuss the foundational energetics principles applied to the major acropolis of Xunantunich, known as the Castillo, and highlight how virtual reconstruction plays a role in developing such energetics studies. Most importantly, I discuss how the scale of monumentality at the Castillo affects architectural energetics outputs and how construction process modeling yields nuance to the energetics of monumentality.

[119] *Chair*

McCutcheon, Patrick [148] see Brown, James

McDavid, Carol (University of Houston)

[5] *Discussant*

McDonough, Katelyn and Dennis Jenkins (Museum of Natural and Cultural History, University)

[113] *New Excavations at an Old Site: Reevaluation of Chronology and Subsistence at the Connley Caves (35LK50), Lake County, Oregon*

The Connley Caves are composed of eight rockshelters eroded into a south-facing ridge of welded tuff, rhyolite, and fine-grained basalt in the Fort Rock Basin of central Oregon. The caves contain deeply buried and well-stratified sediments dating to the late Pleistocene-early Holocene. Excavations directed by Stephen Bedwell in the late 1960s recovered many lithic artifacts and intriguing radiocarbon dates of 10,600±190 14C yr B.P. and 11,200±200 14C yr B.P. Bedwell's interpretations of the Connley Caves data were central to his proposed concept of the 'Western Pluvial Lakes Tradition,' and sparked much debate concerning the importance of wetland resources to early Holocene occupants of the Great Basin. However, his conclusions were questioned due to a lack of precise provenience data, and imprecise methods of analysis. The University of Oregon (UO) field school has since revisited the caves for four field seasons, and will return to the site again in 2016. Recent excavations of Cave 4 uncovered a dense unifacial and expedient tool lithic assemblage, two bone needles, and projectile points of the Western Stemmed Tradition. A summary of observed stratigraphy, recovered artifacts, protein analysis, and radiocarbon dates from the 2014 and 2015 UO excavations are presented in this poster.

McElhoes, Jennifer (California State University Long Beach) and Carl Lipo (SUNY Binghamton)

[110] *Technological and Functional Characteristics of Ceramics and Their Distribution along the Southern California Coast*

Prehistoric ceramics found across southern California have a relatively discrete spatial distribution. While locally manufactured ceramics are common to the south and southeast of the Los Angeles River, prehistoric sherds are rare in deposits located to the northwest. This marked distribution is potentially explained by regional differences in surface ages and post-depositional processes. Alternatively, populations to the north may have had access to resources necessary for pottery alternatives, may have differed in their settlement patterns, mobility, and/or subsistence practices. Finally, it is possible that ceramics are concomitant with distinct population histories and that the south is occupied by populations that are derived from the California Desert. In this poster, I evaluate measurements of technological and functional variability of ceramic assemblages from deposits across southern California to determine the degree of variation that exists in the use and production methods of vessel ceramics. After ruling out differences in surface age and deposition, if aspects of the environment are correlated with space, it is likely that vessel ceramics are tied to an ecological or economic feature of the environment. Alternatively, random variability across space potentially supports the hypothesis that population histories are largely driving the presence of pottery.

McElroy, Kate (Western Kentucky University), Darlene Applegate (Western Kentucky University) and Brianna Brown (Western Kentucky University)

[286] *Bioarchaeological Analysis of Human Skeletal Remains from Site 15Wa916, Warren County, Kentucky*

Site 15Wa916 is a prehistoric burial ground in northern Bowling Green is located immediately south of the pumping station on Barren River along Highway 957 opposite Beech Bend Park. Dr. Jack Schock of Western Kentucky University excavated several prehistoric grave features at the site in May 1973. One uncalibrated radiocarbon date of 910 B.C. indicates the site dates to the early part of the Early Woodland Period. Schock's excavation yielded, among other artifacts, hundreds of human bones and bone fragments. Analysis of the commingled human remains from two of the burials indicates the presence of at least five individuals, including two adult males and one infant of unknown sex. One adult male was affected by severe osteoarthritis, and the infant exhibited a strong periosteal reaction. Large muscle attachments and bone robusticity indicate that the adult male engaged in strenuous physical activity.

McEvoy, Chris [199] see Matheson, Carney

McEwan, Colin (Dumbarton Oaks)

[172] *The Ties that Bind—Color, Structure and Meaning on Miniature Tupu Cords*

Andean tupus (cloak pins) recovered from archaeological contexts often have a single perforation in the middle of the head. This suggests that they were connected by a woven cord and worn in pairs, an observation that is corroborated by ethno-historic accounts as well as contemporary ethnography. There are also some surviving examples of miniature tupus connected by miniature woven cords from capac hucha burials. This presentation describes and analyses one such example from the British Museum collections which incorporates 13 paired tocapu designs.

McFadden, Leslie [65] see Huckell, Bruce

McFadden, Paulette

[164] *Home Is Where the Past Is: The Role of Environmental and Social Factors in Precolumbian Settlement on the Northern Gulf Coast of Florida*

Precolumbian settlement practices in coastal settings were influenced by both environmental and sociocultural factors, but determining the role of each is often hindered by a lack of paleoenvironmental data that is applicable to particular coastal areas. In Horseshoe Cove, on the northern Gulf coast of Florida, settlement practices varied between the Deptford/Swift Creek periods and the Weeden Island Period, but were these practices driven by environmental change or were they linked to social forces? A paleoenvironmental reconstruction specific to Horseshoe Cove made it possible to isolate environmental factors thus providing a better understanding of the sociocultural aspects of shifting settlement practices. When shoreline transgression forced relocation after about 500 B.C., Deptford/Swift Creek residents targeted mainland areas bordering marshes and adjacent to tidal creeks. As new areas were settled, seaward sites were abandoned. After the seventh century A.D., these abandoned sites were re-occupied by Weeden Island people, even though they were isolated from the mainland, likely lacked a source of fresh water, and were more vulnerable to the higher energy open marine environment. The lack of single-component Weeden Island occupations in other similar environmental settings in the cove suggests that these sites may have been targeted because of their previous occupations.

McGill, Dru [137] see Peterson, Staffan

McGillivray, Tegan [262] see Carter, Alison

McGovern, Thomas

[60] *Historical Ecology in the Cold and Wet: Carole Crumley's North Atlantic Legacy*

In 1990, Carole Crumley organized a School of American Research (SAR) seminar that brought together a group of researchers from different areas with interests in a wide range of periods and topics in world archaeology and human ecology. This disparate group was united by Carole's vision of a fresh approach to the interactions of environment and society through time—something beyond the increasingly stale processual/ post-processual debates of that period. Her vision of a dynamic interaction of place, people, history, climate, and dialectical inter-relation of nature and culture owed much to her own exposure to the Annales school and its notion of long term interactions of variables operating at different temporal and spatial scales, of the cross cutting conjunctures that could create transformative change, and of the importance of a sustained regional research focus. The 1990 SAR seminar generated the hugely influential 1994 edited volume and likewise altered the professional trajectories of many of the participants. This presentation provides an overview of the impact of Carole's longitudinal research strategy in two decades of North Atlantic research.

[1] *Discussant*

McGovern, Thomas [261] see Strawhacker, Colleen

McGrath, James (University of Iowa)

[181] *Ochre in the Desert: Preliminary Sourcing and Colorimetric Results from Two Stone Age Sites in the Central Namib Desert*

Ochre becomes ubiquitous across southern African archaeological sites beginning in the Middle Stone Age and continuing throughout the Later Stone Age. For the last decade, ochre research has focused upon the utilization of ochre, cognitive implications of its use, and of the ochre assemblages themselves. Recently, a growing number of ochre studies have attempted to source ochre through a variety of analytic techniques. This study attempts to differentiate ochre raw material sources with a novel method utilizing portable x-ray fluorescence on ochre streak samples produced from analyses of two Middle and Later Stone Age archaeological sites in the central Namib Desert: Erb Tanks and Mirabib Hill Shelter. This study also examines possible relationships between ochre raw material and streak color using quantitative color values.

[13] *Chair*

McGrath, Krista (BioArCh), Keri Rowsell (BioArch, University of York), Christian Gates St-Pierre (Université de Montréal) and Matthew Collins (BioArCh, University of York)

[84] *The Identification of Archaeological Bone through Non-Destructive ZooMS: The Example of Iroquoian Bone Projectile Points*

ZooMS (Zooarchaeology by Mass Spectrometry) is a technique for the identification of archaeological bone. In this study, we apply a refined ZooMS method to worked bone points. The traditional ZooMS technique requires destructive analysis of a specimen, which is obviously problematic when dealing with intact rare artefacts. The bone points are part of large assemblages of bone tools and manufacturing debris recovered from two precontact Iroquoian village sites located in southern Quebec, Canada. White-tailed deer was the most important mammalian species identified in the faunal assemblages. This information combined with the approximate size of the original bone suggested the points were likely deer, however, preliminary ZooMS analyses using this new technique revealed the unexpected species identification of bear. The results were subsequently confirmed using traditional ZooMS and DNA analyses. Further testing of additional artefacts from the site using the modified ZooMS method has resulted in several additional species identifications. These surprising results would never have come to light through traditional zooarchaeological methods, highlighting the importance of advancing biomolecular research in this field.

McGrath, James [121] see Enloe, James

McGrew, Dan [78] see Laluk, Nicholas

McGuire, Randall (Binghamton University)**[54]** *Can Archaeology Slow Down Fast Capitalism?*

The great intellectual myth of the end of the twentieth century was that the twenty-first century dawned in a world of "posts"; post industrial, post colonial, and most importantly, post capitalist. The sociologist Ben Agger has argued that we do not live in a post capitalist world but rather in a world of hyped up Capitalism or Fast Capitalism. More recently, the economist Thomas Piketty has redirected economic research back to the study of wealth and Capital. His work sustains Karl Marx's fundamental observation that the processes of Capitalism tend to increase inequalities in wealth. In this paper, I build on my earlier arguments for a praxis of archaeology to challenge the status-quot and to slow down down Fast Capitalism. This reflection is pessimistic of grand schemes to change the world but suggests that we can impede just a little the rush of Fast Capitalism. We can do this both in the practice of archaeology and in the larger world. The contradictions of Fast Capitalism shape the practice of archaeology both in CRM and in the academy. We can also use archaeology to challenge the ideological lies that support, naturalize, and justify the growing inequalities in wealth.

McKee, Brian (University of Arizona)**[32]** *The Forgotten Area: The Archaeology of Morazán, El Salvador*

The archaeology of the department of Morazán, in northeastern El Salvador, is poorly known. Several sites there were included in national site lists compiled in the 1920s and 1940s, and a small survey was conducted in the 1950s, but only one site, the Gruta del Espíritu Santo, has been thoroughly documented. Multiple reasons explain the dearth of archaeological research. Much of the worst fighting during the 1980s and 1990s civil war occurred in Morazán, which is also one of the poorest and most remote areas of El Salvador. The precolumbian Lenca and Ulua sites there tend to be smaller and less spectacular than many sites elsewhere in El Salvador. In 2015, Peace Corps began a project to document archaeological sites in Morazán and to survey a portion of the department to assist a larger tourism development project. We documented precolumbian sites including obsidian scatters and Lenca and Ulua settlements and hilltop fortresses. XRF sourcing of obsidian recovered from various settings suggests connections to Guatemala and Honduras. Historic and colonial sites include settlements, churches, and sites related to indigo and coffee, important colonial industries. Other sites consist of civil war battle locations.

McKee, Arlo [168] see Chavez, Christina

McKeown, Ashley H. [288] see Green, Kirsten

McKillop, Heather (Louisiana State University)**[238]** *Paynes Creek Salt Works: Ten Field Seasons of Underwater Maya Survey, Mapping, and Excavations*

The unexpected discovery of wooden buildings preserved in the mangrove peat sediment below the sea floor in Paynes Creek National Park, southern Belize, provided an opportunity to re-evaluate the nature of salt production in the ancient Maya economy and the nature of ancient Maya wooden architecture. Innovative techniques based on shallow underwater survey elsewhere were used to systematically search in a salt-water lagoon system for wooden structures and associated briquetage—the pottery used to evaporate brine over fires to make salt. The first phase of field research included survey and total station mapping of over 4,000 posts and associated artifacts by a team of LSU grad and undergrad students and the author. The second phase of field research brought in specialists for mangrove sediment coring and palynology, sonar using an automated research vessel specially-designed for shallow water, and a drone for low-level photography. This phase also included transect excavations at 10 underwater salt works to investigate production and other activities by LSU grad and undergrad students and the author. A pilot study in 2015 included diving deeper sites that also included shell middens, but had been inaccessible to the field teams using Research Flotation Devices (RFDs).

[158] *Moderator*

[158] *Discussant*

McKillop, Heather [238] see Feathers, Valerie

McLay, Eric (University of Victoria)**[132]** *The Monumentality of Clam Gardens in the Southern Gulf Islands, British Columbia*

Clam gardens represent monumental coastal landscapes constructed by northwest coast hunter-gather-fisher peoples over the past 1,000 years. The slow, laborious movement of boulders and cobbles to build up rock-walled intertidal terraces not only created new productive shellfish habitat for greater food security, but transformed social and political relations over peoples' rights to lands, foreshore, and access to shellfish at a regional scale. As large-scale community works, clam gardens must be viewed as contested monuments that were actively negotiated in their construction, use, and maintenance over time. More broadly, clam gardens must be viewed as monuments where new forms of domestic relations were created by peoples, shellfish, and the animated sea. This paper will explore aspects of monumentality of clam gardens in the Southern Gulf Islands, British Columbia, where regional archaeological survey have discovered these megalithic works stretch for kilometres along the coast.

McManamon, Francis (Center for Digital Antiquity) and Jodi Flores (Center for Digital Antiquity)**[10]** *Heritage in the Digital Age: Guidelines for Preserving and Sharing Heritage with Digital Techniques.*

Individuals, organizations, and public agencies responsible for cultural heritage face challenges and opportunities as stewards of this important information. Challenges include: heritage loss due to poor access and preservation; lack of perceived value; hesitancy to share information resulting in absence of public interest; and loss of heritage information through destruction or neglect. Digital techniques can provide access to information (with appropriated controls) and long-term preservation. Current legal and policy issues related to digital technology and cultural heritage are summarized. Our work with digital archaeological data is used to consider how to preserve more general cultural heritage data and information.

The stewardship of archaeological monuments and sites began even before the NPS was created. In the U.S., some of these early efforts occurred at sites that later would become part of the National Park system. The management of archaeological resources has become more scientific and systematic since its earliest days, but we still learn from past efforts and codify what works into contemporary practice. Current efforts focus on the maintenance and protection of archaeological resources; improving the care for physical collections, systematic building of resource inventory and related data; and ensuring the appropriate access to and long-term preservation of archaeological data and information. NPS archaeologists, along with colleagues in a variety of other organizations, professions, and specialties need to work cooperatively to meet the current and future challenges.

[202] *Discussant*

[261] *Chair*

McNeil, Cameron [121] see Verlee, Jotka

McNeil, Cameron (Lehman College, CUNY)

[212] *Rio Amarillo: A Community on the Edge of the Kingdom*

Situated along the frontier between Maya and non-Maya lands, Rio Amarillo reflects mixed allegiances in its architecture and artifacts, although its Late Classic ceremonial core is most strongly associated with Copan. While politically autonomous during the Early Classic, an inscription on an altar at the site demonstrates that this precolumbian town came under Copan's power during the time of Ruler 12. The construction of an elaborately sculpted building during the reign of Ruler 16 suggests that this control continued through to the end of the Late Classic. During this period, the ceremonial core of the site and its residential structures broadcasts affiliations with Copan, including the veneration of K'inich Yax K'uk' Mo', Copan's "founder." Like Copan, Rio Amarillo's population enjoyed imported goods from eastern Honduras, but unlike Copan, some residential structures outside of the center were constructed in styles that copied those of the interior of Honduras. For the large polity downriver from the site, the fertile alluvial plains of Rio Amarillo may have helped solve food shortages in the kingdom's center, but this area likely held another valued resource, the tropical rainforest and its products that stretched along the hillsides to the north of the town.

[212] *Chair*

McQueen, Felipe [105] see Jennings, Justin

McReynolds Shebalin, Theresa (Durham Academy and Exploring Joara Foundation)

[37] *Lessons from the Classroom: A Teacher's Suggestions for Improving K-12 Archaeology Outreach*

Archaeologists committed to public outreach are typically motivated by the hope that helping individuals appreciate how archaeology contributes to understanding the past will in turn encourage citizen stewardship of the archaeological record. Archaeologists working with children in particular have the best chance of making an impact in this area since their audiences can in turn act upon and help spread messages of site preservation and other matters of archaeological ethics for many years to come. Unfortunately, many K-12 outreach efforts fall short of satisfactorily reaching this overarching objective, usually because archaeologists do not understand how to design resources and activities that effectively reconcile their own objectives with the very different goals of K-12 teachers and their students. This poster and accompanying handouts summarize lessons learned by an archaeologist-turned-classroom-teacher and offer practical suggestions for professional archaeologists involved in K-12 public outreach. Topics covered include finding appropriate audiences in and outside of the classroom, designing curricula and activities that will appeal to those audiences, and evaluating the effectiveness of educational resources and programs with respect to meeting the objectives of all participants.

McTavish, Rachel (University of Wisconsin-Milwaukee), Lucienne Van de Pas (University of Wisconsin-Milwaukee) and Amy Klemmer (University of Wisconsin-Milwaukee)

[225] *Economics, Culture, and Ecology: A Comparative Study of Oneota Localities in Wisconsin*

The manifestation of different cultural history trajectories of Late Prehistoric Oneota groups from eastern and western Wisconsin can be seen in multiple material classes, including faunal remains. Despite the generally similar use of shell as a ceramic tempering agent and generic vessel shapes, Wisconsin Oneota groups vary among localities in settlement and subsistence practices. The relationship among Oneota groups and wild rice, maize, aquatic, and upland game, as well as the choice of materials for food procurement technology, is compared. In relation to Classeen's (1968) and Borgstrom's (1962) models for agriculturalist communities' risk-buffering behaviors using seasonal shellfishing, this research expands beyond the economics of potential risk management to include the socio-cultural aspect of differing degrees of Middle Mississippian influence. This paper presents an examination into the treatment of the same resources by groups occupying the Lake Koshkonong locality in southeastern Wisconsin and those in the La Crosse locality in western Wisconsin.

Mead, Jim [222] see Steadman, David

Means, Bernard (Virtual Curation Laboratory)

[35] *Visualizing a Wired World's Past: Digital and Tactile Public Archaeology in the Virtual Curation Laboratory*

The Virtual Curation Laboratory at Virginia Commonwealth University (VCU) uses 3D scanning technologies to capture archaeological discoveries from all over the world. Used effectively, these 3D digital artifact models can help cultural heritage institutions share their amazing discoveries to a global audience and not simply to their fixed geographic locations. How to share these 3D digital artifact models to an audience wider than undergraduate students and professional archaeologists has proven more difficult than originally expected. Challenges encountered have included concerns over cultural patrimony, intellectual property rights, cross-platform technological compatibility, and accessibility issues for disabled persons. Here, I discuss different techniques we and our partners have implemented to make these 3D digital models more broadly accessible in virtual and tangible realms, ranging from passive animations posted on the internet, to displays of accurately 3D printed and painted artifact replicas at public archaeology events and in museum exhibitions.

[202] *Discussant*

Me-Bar, Yoav [294] see Brady, James

Medellín Martínez, Christian (UASLP) and Verónica Pérez Rodríguez (University at Albany)

[169] *La producción lítica y su papel en la economía de Cerro Jazmín*

Mediante el análisis morfológico de los materiales líticos de talla obtenidos durante las excavaciones 2013–2015 del Proyecto Arqueológico Cerro Jazmín, se reconocerán las materias primas, formas y etapas de producción que se emplearon en diferentes zonas de este centro urbano mixteco, interpretadas como un área habitacional, áreas públicas y área de producción de figurillas, con el fin de profundizar en la producción lítica y en la economía del sitio. En las diferentes áreas de excavación se observaron dos materias primas principales para talla: sílex y obsidiana. En el caso de la obsidiana se han encontrado navajillas prismáticas de etapa de producción avanzada y pocos desechos de producción, lo que sugiere una producción importada a Cerro Jazmín. En cuanto al sílex, pudo obtenerse de un sitio cercano y los artefactos encontrados permiten plantear una producción local de artefactos enfocada en herramientas expedientes sobre herramientas formales. Así mismo, se observó una variación en la cantidad de artefactos encontrados en las áreas, que puede deberse a su función.

Medina, Paulo (Boston University), Justin Holcomb (Boston University) and Kristian Boschetto (Boston University)

[237] *Fuzzy Numbers or Publishable Data? An Intra-Instrument Test of pXRF Calibration Techniques on Obsidian from Highland Mexico*

Archaeological applications of portable X-ray Fluorescence Spectrometry (pXRF) have increased over the last decade due to the instruments' low cost, ease of operation, and decreased analysis time. Obsidian provenance studies utilizing pXRF are now a common approach to answering questions regarding resource access and/or trade relationships in many regions and sub-disciplines of archaeology. Despite this increased popularity, the validity and accuracy of this device and the results derived from these analyses are still commonly met with skepticism. We argue that this is due to a misunderstanding of the calibration techniques needed to properly utilize pXRF devices. Here, we discuss a study comparing the results of pXRF analysis of an archaeological obsidian assemblage from highland Mexico using "off the shelf" calibration to those derived from an "altered calibration" using USGS standards. These data were further compared to previously obtained LA-ICP-MS and desktop XRF data obtained from the same assemblage. This study seeks to answer the following questions: (1) How reliable are factory calibration techniques? (2) Is it possible to provenance obsidian from highland Mexico using "off the shelf" calibration? and (3) Given these data, what are the larger implications and lessons for archaeologists interested in using pXRF for provenance studies?

Medina-González, Isabel (ENCRyM-INAH), Manuel E. Espinosa-Pesqueira (Laboratorio de Microscopía Electrónica - Instituto) and Gregory Pereira (ARS-Centre National de la Recherche Scientifique –)

[179] *Mesoamerican Silver Bells: New Data on Proto-Tarascan Archeometallurgy*

Silver is fairly uncommon in Mesoamerican archaeology, if compared with copper and gold, both of them materials that have been widely studied particularly in relation to the development of Western Mexican precolumbian cultures. Henceforth, material and technological aspects regarded Mesoamerican silver metal-work are still widely unknown. This paper presents the initial results on a interdisciplinary research based on state of the art analytical techniques (XRD, SEM-EDX-XRF) on a couple of bells made of silver alloy which were recently discovered in Malpaís Prieto (Zacapu, Michoacan, Mexico), an archaeological site ascribed to Proto-Tarascan Uacusecha peoples. The investigation discusses previous information about precolumbian silver artefacts in order to set the newly obtained data up within the framework of the metallurgic regional model of western Mesoamerica.

Meehan, Pascale (University of Colorado, Boulder)

[20] *Preliminary Results of the Zacatepec Archaeological Project*

The archaeological site of Zacatepec, Oaxaca, is located in the coastal mountains of the state of Oaxaca, Mexico, in between the modern towns of Putla de Guerrero and Pinotepa Nacional. First identified in 2014, a two month field season was undertaken in June and July of 2015 to uncover a larger portion on the site and identify the time period with which the site is affiliated. This presentation summarizes the results of the summer 2015 field season which incorporated both a survey and an excavation component. These results will then be situated within the broader context of Oaxacan archaeology and avenues for future research will be discussed.

Meeker, Halston

[123] *Measuring Differences in Occupation Length at Short Term Habitation Sites along the Base of the Colorado Front Range*

Two stone circle sites, T-W-Diamond (5LR200) and Killdeer Canyon (5LR289), offer insight into occupation length and structure use intensity. The two are located in northern Colorado, in the hogback zone along the Front Range of the Southern Rocky Mountains. Elizabeth Ann Morris and the Colorado State University field school excavated the sites in 1971 and 1982. This paper summarizes my thesis research, examining how temporary stone circle habitation sites actually are. Stone circle sites can indicate differences in seasonal mobility strategies based on how intensive and how long each structure is occupied. This analysis examines use intensity and occupation length through ratios of local and non-local chipped stone, faunal procurement and processing strategies, and petrographic and radiocarbon analyses. Results from these analyses are used as a proxy to situate T-W-Diamond and Killdeer Canyon on an occupation length continuum. The findings are then compared to other regional residential sites in similar ecological settings.

Meer, Kelsey (Mississippi State University), J. Ryan Young (Mississippi State University), D. Shane Miller (Mississippi State University) and Albert C. Goodyear (University of South Carolina)

[8] *2015 Allendale Chert Quarry Survey: Methods and Preliminary Results*

In 1984, Goodyear and Charles conducted a survey of an area adjacent to the Savannah River encompassing the Allendale Chert quarries, which includes the multi-component Topper Site (38AL23) in Allendale County, South Carolina. During the summer of 2015, Mississippi State University revisited a 102-acre area included in this survey. The survey revealed a near continuous scatter of lithic debitage throughout the project area, at varying depths across different geomorphological settings. Preliminary results of this survey suggest that stratified archaeological deposits that date from late Pleistocene to historic in age are likely present in many areas surrounding the Allendale Chert outcrops.

Mehta, Jayur [60] see Rodning, Christopher

Mehta, Jayur (Tulane University) and Elizabeth Chamberlain (Tulane University)

[277] *Monumentality and Cultural Resilience in Coastal Louisiana*

Resilience is the ability of complex systems to adapt to change in the wake of disturbance. Here, we describe the relationship of natural deltaic land evolution and anthropogenic monument construction using a case study of Ellesly Mound, an earthen monument located in the Lafourche subdelta of the Mississippi Delta. Borehole and LIDAR data show that Ellesly mound is situated above naturally deposited crevasse sediments underlain by organic-rich facies indicating a relatively low-lying vegetated environment, and then a succession of emergent delta facies. This suggests that native communities waited until land was suitably stabilized and elevated before constructing major earthen monuments.

Meiggs, David [134] see Brad, Chase

Meira, Sérgio (Museu Paraense Emilio Goeldi (MPEG))**[23]** *Cariban Historical Linguistics: The State of the Art*

The Cariban language family, with between 25 and 40 languages (depending on one's criteria for distinguishing languages from dialects, and on the quality of older sources for extinct languages), is one of the most important language families in South America, together with Tupian, Arawak, and Macro-Ge. Although much descriptive work remains to be done, there are now sufficiently many good descriptions of Cariban languages to warrant good lexical comparative work, going well beyond Girard's 1971 Proto-Carib phonology. In this presentation, the current results of ongoing research on the history of the Cariban lexicon and its consequences for our understanding of the external history of Cariban peoples will be discussed in detail, with special attention to the reconstructibility of specific lexical items relating to Cariban culture and to current theories on the location of the Cariban homeland and possible migration routes, given the current geographic distribution of Cariban peoples.

Meire da Silva, Sergio [167] see Silva, Rosicler

Meissner, Nathan [179] see Marino, Marc

Meissner, Nathan (Southern Illinois University Carbondale), David McCormick (Yale University) and Marc Marino (University of Arkansas)**[212]** *Socioeconomics of Craft Production in the Copán Hinterland: The Chert Industry of Río Amarillo, Honduras*

This study presents new data from the site of Río Amarillo, Honduras, focusing on the social aspects of craft production in the political sphere of Copán, Honduras (A.D. 400–900). Between 2011 and 2014, excavations led by the Proyecto Arqueológico Río Amarillo Copán (PARAC) have recovered large quantities of microcrystalline silicate artifacts, including nodules, debitage, and finished tools. Such data are important as they shed light onto the procurement strategies, methods of local production, and the economic place of Río Amarillo during a period of proposed Copán expansion. Data suggest that residents partially relied on a local procurement network that included settlements near the confluence of the nearby Río Piedras Negras and Río Blanco. In addition, two unknown microcrystalline silicate sources were exploited late in the site's history, possibly from more distant areas in the Copán pocket. A full sequence of reduction activity was documented at the site—a trend that appears to increase during later occupations including the transition from the Terminal Classic to Early Postclassic periods (A.D. 800–1200). Thus, this study adds to a growing body of intra-regional studies of the Copán hinterlands by highlighting the interrelationships among polities at a time of political integration.

[291] *Chair*

Mejía, Martha [14] see Carvajal Contreras, Diana

Mejía Cano, Martha (Mejía Cano)**[14]** *El Consumo de Plantas en el Caribe Colombiano durante el Formativo Temprano (7000–3000 A.P.): Una Evaluación Paleoetnobotánica de la Subsistencia a partir de Almidones*

En el norte de Colombia, el Formativo Temprano se ha considerado un período transcendental para entender el paso de una economía de caza y recolección a la experimentación con plantas. Nuevos aportes efectuados en los sitios arqueológicos de Puerto Hormiga, Monsú y San Jacinto 1, ubicados en el departamento de Bolívar ha permitido la recuperación e identificación de gránulos de almidón de varias plantas (entre ellas la yuca, el maíz y el ñame) obtenidos del interior de varios fragmentos líticos, de concha y en una muestra de cálculos dentales. Estos resultados permiten proponer que no solo los grupos humanos que habitaron los sitios procesaron y consumieron los cultivos de raíces como tradicionalmente se había sugerido en las investigaciones, sino que a ello se le sumaba tubérculos, semillas y rizomas como complemento a la ingesta de animales terrestres. La aproximación de estos tres sitios se une al pequeño pero creciente número de regiones en el trópico y del interior de Colombia, lo que suscita un nuevo interés sobre la importancia relativa de diversidad y contribución a la dieta de estos recursos como de las rutas de domesticación y propagación de los cultivos en Suramérica.

Mejía Ramon, Andres, Luis Barba (Instituto de Investigaciones Antropológicas, UNAM), Deborah Nichols (Dartmouth College) and Sergio Gomez (Zona Arqueológica de Teotihuacan, INAH)**[129]** *Watering Taloc's Gardens: Ancient Irrigation in the Teotihuacan Valley*

As showcased by the "Feeding Teotihuacan" symposium at the 79th Annual Meetings of the Society, there has been a surge of interest in understanding Teotihuacano agriculture or food production. Nevertheless, there is still the glaring question of how the ancient inhabitants dealt with water collection and irrigation in the semi-arid environment of the northeastern Basin of Mexico. Although canal systems have been previously identified and excavated in various sites throughout the Teotihuacan Valley, the scale of these systems has eluded study. Using remote sensing and geospatial analysis, we have identified previously unknown canal systems throughout the valley, and have intensively studied one such system in the Ejido de San Sebastian through geophysical prospection. As a result, it is now possible to better understand the scale of such systems and hydraulic management techniques employed by the inhabitants of the valley through the centuries-old history of Teotihuacan. This paper will attempt to reconstruct the irrigation system of ancient Teotihuacan using the current sources of information available, and show how through time, the strategies employed by the inhabitants changed.

Melcher, Jennifer

[6] *25 Years of Digital Archaeology—Updating the Past to Plan for the Future*

Beginning in the late 1980s, the University of West Florida Archaeology Institute began making extensive use of digital technology to aid in archaeological research. The past 25 years of research have left a plethora of data on a variety of digital media. Current work on developing a new interpretive plan for downtown Pensacola, Florida made it necessary to update and combine as much of this data as possible. Updating this information required the use of a variety of hardware and software before combining data into a single GIS product and associated artifact database. This combination of older data allows for easier access by researchers to look for broad patterns and make new interpretations of the overall downtown area.

Melesse, Addisalem [269] see Duff, Andrew

Melgar, Emiliano [44] see Bernard, Henri

Melgar, Emiliano (Museo del Templo Mayor-INAH) and Emiliano Gallaga (EAHNM)

[179] *The Blue Stones from Chiapa De Corzo: Mineralogical Identification and Manufacture*

Since the beginning of Mesoamerican societies, the elites employed prestige goods to display their power and status. At Chiapa de Corzo (Chiapas, México), a Formative Period site that lasted until the late Classic, the archaeologist recovered a group of ornaments crafted on bluish stones that contrasts with the common greenstone objects found at the tombs. In this paper, we present the mineralogical identification and technological analysis of them in order to discuss their local or foreign origin. As results, we identified them as amazonite, a blue-green variety of microcline feldspar, which sourcing areas are located in Chihuahua and Colorado. This identification only incremented the nonlocal items list that the Chiapa de Corzo elites obtain through long exchange relationships. Based on the experimental archaeology and the SEM analysis of the manufacturing traces, we detected the standardization of tools and techniques. Finally, we compared these traces with other lapidary items of the site, in order to discuss their place of production.

Melgarejo Pérez, Manuel [264] see Pool, Christopher

Mena, Mario [93] see Poister, Nicholas

Ménard, Clément (University of Florida), François Bon (Université Toulouse Jean Jaurès) and Lamya Khalidi (CEPAM - CNRS, Université Nice Sophia Antipolis)

[22] *Lithic Traditions in the Horn of Africa from MIS 3 Onwards: Views from the Main Ethiopian Rift*

The Horn of Africa plays an important role in debates on emergence and dispersal of Anatomically Modern Humans (AMH) and their associated technologies (Middle Stone Age). In comparison, the period that follows (Late Stone Age) has been the subject of much less investigation. We argue that evidence regarding prehistoric groups that remained or came into the region during the latest part of the Pleistocene is critical for understanding the conditions of AMH's unprecedented expansion and diverse adaptive solutions. We present the results of archaeological investigations conducted in the Ziway-Shala basin, a well-developed lacustrine sequence from the central part of the Main Ethiopian Rift, with an emphasis on lithic technology. Based on this, we review the available archaeological data from Marine Isotope Stage (MIS) 3 up to the onset of the Holocene at a regional scale and discuss the links between technological traditions. We finally stress the lack of evidence for human occupation during MIS 2 and question the role of several environmental constraints as well as possible research bias.

Mendelsohn, Rebecca (University at Albany, SUNY)

[20] *Cultural Processes without Chronology: The Formative to Classic Period Transition (150 BC- AD 200) at the Early Urban Center of Izapa, Chiapas, Mexico*

In southern Mesoamerica the transition from the Formative to Classic Period (150 B.C.–A.D. 200) was a time of population decline, cessation of monumental construction, and abandonment of many sites. At the city of Izapa, located in the Soconusco region of Mexico, evidence for a dramatic shift has been presented for the Hato phase (ca. 150 B.C.–A.D. 50). The New World Archaeological Foundation archaeologists, working in the 1960s, noted that an urn burial custom and use of foreign pottery styles arrived at Izapa just as the tradition of low relief monuments came to a close. They cited this data as evidence for a new ethnic or cultural association or domination at the site. This paper provides evidence from recent excavations at Izapa, a re-analysis of early survey collections from the region, and the re-discovery of a nearby center. These data suggest that, while some undeniable changes occurred at the site, Izapa's transition during the Hato phase was far less dramatic than originally reported. This study illustrates how an improved understanding of ceramic chronology impacts our understanding of major cultural shifts in the region. It serves as a cautionary tale for drawing cultural conclusions before a firm chronology is developed.

Mendez, Cesar [207] see Reyes, Omar

Méndez, César (Universidad de Chile)

[139] *The initial Peopling of Continental Aisén: New Data from Cueva de la Vieja*

This paper summarizes recent research conducted at Cueva de la Vieja site (BN15; 45°16'27" S; 71°32'24" W, 718 masl) in the Ñirehuao Basin, Aisén, Chile, targeted at characterizing aspects of the initial peopling of Central Western Patagonia. Systematic stratigraphic excavations at this small cave yielded material evidence for human activities starting at 12,000 calibrated years B.P. and ever since redundant occupations at the same locale. Site formation processes are described and discussed in frame of available paleoenvironmental reconstructions and the Post Glacial reconfiguration of the landscape. The archaeological assemblages and features are analyzed and further discussed in order to characterize technological choices, the activities conducted at the site, and the occupation time-span. These results, analyzed in light of the available radiocarbon dataset, allow characterizing an intermittent, though recurrent human signal at the locale and the basin. This is further compared to equivalently radiocarbon dated sites in the broader region of northern Aisén in order to build an image on the intensity and character of space hierarchy for the initial settlement of the region. FONDECYT grant #1130128.

[139] *Chair*

Mendoza, Edison [31] see Matsumoto, Yuichi

Mendoza, Rubén (CSU Monterey Bay)

[117] *The Harvest of Souls: Mimesis, Materiality, and Ritual Human Sacrifice in Mesoamerica*

The art and science of ritual human sacrifice is a fundamental axiom of Mesoamerican social violence. Accordingly, interpretive constructs for human heart excision and ritualized dismemberment remain keyed to synchronic ethnohistorical and iconographic frames of reference or practice. Though ritual dismemberment, decapitation, and cannibalism have been traced to remote antiquity in highland Mesoamerica, the cosmological underpinnings of human heart excision, and its corollary technologies of terror, have yet to be fully interrogated in terms of naturalistic metaphors and agricultural mimesis. This paper reviews those cosmological constructs and agricultural metaphors instrumental to the formation and validation of Mesoamerican ritual human sacrifice. As such, this study explores those agricultural metaphors identified with (a) the planting of tzompantli skull banners, (b) human heart excision, and (c) blood tribute or autosacrifice. I hereby contend that Mesoamerican agricultural practices constitute the instrumental inspiration for ritual decapitation, the installation of skull banners, and their identification with the cleft-earth ball courts of creation. This interpretive schema is operationalized via botanical metaphors identified with maguey castration, and the extraction of the agave heart and its "blood" as a corollary dimension of mimesis that fueled the ideology of human heart excision at the dawn of the Mesoamerican Classic era.

Menocal, Tatianna (Desert Research Institute)

[114] *Chipped Stone Results from Four Lowland Virgin Branch Puebloan Sites*

The Yamashita sites are four Virgin Branch Puebloan sites in southern Nevada dating between the early Pueblo II (A.D. 1000–1050) and the Pueblo III period (A.D. 1200–1300). This poster summarizes the chipped stone tool and debitage data collected from the sites. The goals of this project were to examine what the chipped stone tool and debitage site assemblages revealed in regard to lithic technology organization. As sedentary settlements with a horticultural subsistence, the expectation was that the chipped stone would show increased expedient technology and more diversified tool assemblages. Yet, results indicated that persistent chipped stone technological design choices were implemented in tool production, which did not conform to expected patterns of chipped stone manufacture and use. Tool assemblages were overwhelmingly the result of the manufacture and maintenance of biface technology. Debitage data supported this, showing high proportions of biface maintenance and retouch. As bifaces tend to be the main tool type for mobile populations, as tools associated with risk-management, time-intensive to produce but made to be dependable, analysis of these assemblages possibly suggests that social conditioners of tool preference superseded environmental and economic choices involved in tool design regardless of accessible high quality raw material and sedentism.

Menz, Martin (University of South Florida)

[8] *Like Blood from a Stone: Teasing Out Social Difference from Lithic Debris at Kolomoki*

Early phases of Kolomoki's occupation have been characterized as relatively egalitarian, with little evidence for status differentiation. However, patterned variability in lithic raw material use and intensity of production in domestic areas suggests heterogeneity in the community at multiple scales. In light of Kolomoki's emphasis on communal ceremony, internal divisions between groups of households highlight the tension between public and private expressions of status and social solidarity. New radiocarbon dates from the southern margins of the village have allowed us to assess the contemporaneity of this pattern, and by extension, the chronology of village aggregation.

Menzer, Jeremy [145] see Ernenwein, Eileen

Menzer, Jeremy (Environmental Dynamics PhD Program, University of Arkansas), Katie Simon (Center for Advanced Spatial Technologies, University of Arkansas), Matthew Piscitelli (Integrative Research Center, The Field Museum) and Carl Williford (Department of Anthropology, University of Arkansas)

[206] *Ground-Penetrating Radar and Topographic Correction Using Ground-Based Photogrammetry at the Late Archaic Ceremonial Site of Caballete (Fortaleza Valley, Peru)*

Caballete is a Late Archaic (3000–1800 B.C.) ceremonial site located in the Fortaleza Valley of Peru. In 2015, a focused archaeo-geophysical survey was conducted as a pilot effort to determine the utility of ground-penetrating radar (GPR) and magnetometry in locating subsurface features at the site. The Caballete survey included approximately 1.5 ha of targeted GPR and a smaller magnetometry survey across the 400 ha site. The site features six platform mounds ranging from approximately 5 to 17 m in height. Five of the mounds are arranged in a "U" pattern. An open area of approximately 10 ha is situated within this "U" and features a centrally located low lying rise of 0.12 ha. Five GPR survey areas were selected instead of one large contiguous area in order to test multiple architectural features throughout the site. Due to environmental and logistical restrictions an aerial photogrammetric survey was not possible. Instead, ground-based photogrammetric photos were taken to produce digital elevation models (DEMs). DEMs were then used to topographically correct the GPR data. This study tests the applicability of non-aerial photogrammetry when drones or kites are inaccessible or fail. In addition, feature detection with topographically corrected and non-topographically corrected GPR data are compared.

Menzies, Andrew [57] see Vidal Montero, Estefania

Meredith, Steven (Panamerican Consultants, Inc.) and Daniel Turner

[98] *Mossy Bluff, an Early Alabama Site in Northeast Alabama*

The Alabama people, along with the affiliated Coasati, were an important part of the Creek Confederacy in the late eighteenth century. Excavations at Mossy Bluff (1Ct610) in northeastern Alabama revealed the first Alabama site to be identified in the area that they inhabited before their migration and coalescence with the Creeks. The site is located in a relatively secluded location, near the southeastern margin of what is interpreted to be the tribe's pre-migration territory. This paper describes the Mossy Bluff material culture as a first step toward identification of pre-coalescent Alabama sites and perhaps their post-migration households within the larger Creek confederacy.

[225] *Chair*

Meredith, Steven [225] see Turner, Daniel

Merrick, Dustin (California State University Northridge) and Matthew Des Lauriers

[245] *The Problem of Geographic Circumscription, Population Aggregation, and Ideal Free Distribution on Isla Cedros, Baja California, Mexico*

In the last half-century, studies using human behavioral ecology (HBE) have made significant headway in modeling how humans in the past would have adapted to the environmental constraints surrounding them. There has been much less progress in terms of examining the socio-political pressures hunter-gatherers in the past would have felt in their daily lives. Factors driving choices in these models are often based on an underlying assumption of ideal free distribution; however, one is hard-pressed to find an example where social and political pressures failed to influence peoples' choices in the past. This paper aims to employ HBE concepts within a specific historical framework in order to explore how social structure and demographics might have affected the inhabitants of Isla Cedros during the late Pleistocene as compared to Montero (A.D. 400–600) and Huamalgüefo phase (A.D. ~1150–1732) sites across the landscape. This diachronic approach uses Cedros as a case study in order to showcase the ways in which socio-political constraints may outweigh ecological incentives. By incorporating a historically contingent and geographically specific context to models of past human behavior, this paper seeks to further our ability to understand the dynamic and reciprocal relationships between societies and their natural and physical environments.

Merrick, Dustin [277] see Des Lauriers, Matthew

Merriman, Christopher [65] see Huckell, Bruce

Merwin, Keith (Institute of Maya Studies, Inc.)

[121] *Utilizing LED and Solar Power at a Remote Field Site in the Holmul Region*

Providing adequate lighting for subterranean work at a remote site in the Peten of Guatemala usually involves flashlights or gasoline generators and CFL lights on homemade power cords. Because of the cost of generators and the difficulty and cost of transporting fuel to the field site, most tunnel work uses head lamps and flashlights. In an effort to be environmentally sensitive and to be more efficient the Holmul Archaeological Project has started using 12 volt LED light strips powered by a battery that is charged by solar panels or a generator. Battery charging by generator is still more efficient as multiple batteries can be charged by a single generator during the evening. The LED strips are far more efficient and durable than incandescent or CFL bulbs. This research covers our selection and design of the LED system and the first field season using them. Additional work was done at both field camps, Holmul and Cival, to increase the use of solar power for LED lights, to recharge computer and camera batteries, and provide food refrigeration.

Merwin, Daria (NY State Historic Preservation Office)

[157] *Prehistoric Maritime Cultural Landscapes in the New York Bight*

The study of prehistoric maritime cultural landscapes (or seascapes) in the broadest sense seeks to explore the relationship between people and the water. If we are to reconstruct the nature of this relationship over time along the Atlantic coast of North America, however, we must account for environmental changes, particularly sea level rise and related shifts in ecological communities and habitats on the shore and at sea. This paper examines the coastal archaeology of the New York Bight (the bend in the Atlantic coast between southern New Jersey and Cape Cod) over the course of the Holocene, drawing data from terrestrial and now submerged sites to examine topics such as the role of coastal environments in human settlement, evidence for fishing and seafaring technology, and the origins and consequences of adopting maritime cultural adaptations.

Messal, Sebastian

[34] *Filling the Gap: Continued Large Scale Geomagnetism at Hopewell Mound Group, Ross County, Ohio*

This report presents the results of a large-area magnetic gradient survey at Hopewell Mound Group, a unit of Hopewell Culture National Historical Park in Ross County, Ohio. In 2011, a first survey covered only half of the archaeological monument, but for reconstruction and heritage management of the site a complete survey was sought. This survey was conducted in April 2015 by the German Archaeological Institute. During the survey, several magnetic anomalies of potential archaeological interest were detected, including known features from nineteenth century maps and many other new features of interest which are forming a new and very detailed picture of the ancient Hopewell site.

Messenger, Phyllis (University of Minnesota)

[11] *Archaeologists and the Pedagogy of Heritage: Preparing Scholar-Practitioners for Complex and Changing Heritage Work*

Heritage studies and public history are the publicly engaged and community-accountable practices of historical scholarship, whether it is based in archival research, archaeology, architecture and preservation, landscape studies, or other related areas. Archaeologists share a commitment to public interpretation, education, and preservation with these other disciplines, and graduate education must reflect this reality. Today's scholar-practitioners need to understand the connections and common issues shared by all these perspectives in a heritage field increasingly characterized by interdisciplinary integration and innovation, a diversity of voices and authorities, and responsibilities shared broadly among agencies and with various publics. This paper will discuss a cluster of innovations in undergraduate and graduate education offered in a variety of settings for archaeologists and others preparing to work in heritage fields. A particular focus will be on work toward establishing a Masters in Heritage Studies and Public History at the University of Minnesota as a collaborative initiative between a Tier I Research University and a State Historical Society. Goals of this graduate program include providing a solid scholarly/professional background, offering practical training for working with public audiences, and increasing the diversity of scholar-practitioners entering the heritage field.

Messenger, Jr., Lewis (Hamline University)

[11] *Engaging the "First Person" in the Past—BACAB CAAS Revisited*

Descendant, often indigenous, communities, have felt varying degrees of tension between themselves and archaeologists. Historically, this results from an archaeology that often treated ancient cultural materials as specimens to be scientifically analyzed. While seen as contributing to the greater knowledge, the sense of the ancient individual, of the person—those often perceived as direct ancestral kin of descendant communities—is lost. In many cases, this has led toward feelings of distrust and indignation toward archaeologists. Taking advantage of anthropology's skills and talents toward pursuing cross-cultural empathy, I have developed a pedagogical approach for undergraduates, both majors in anthropology and non-majors, combining archaeological research and creative writing. It is a semester-long process involving careful research into the specific details of the minutiae of day-to-day life of a

particular culture, while forcing students to approach it in a first-person narrative fashion. Students begin to confront archaeological epistemology to understand their person's life in the past. That person's heritage becomes meaningful to today's student who has learned how to personalize those whose "small things forgotten" are revealed today archaeologically.

Messer, Andrea (Penn State)

[250] *Discussant*

Metzger, Melissa (University of Bradford)

[146] *Polished Flint Discoidal Knives*

This Ph.D. research investigates the use of polished flint discoidal knives from the Late Neolithic/Early Bronze Age, which are reportedly unique to the British Isles. No scientific study has been performed on these artifacts and functional understanding to date is based on contextualized hypotheses from the literature. The three main hypotheses from the literature are that the discoidal knives are perceived as: 1) unused status symbols; or that they were used: 2) for butchering; or 3) for the processing of hides. Recent research has shown that these tools did not function well as hide scrapers. Use-wear on the few archaeological samples studied so far does not support that hypothesis.

Polished stone artifacts can be difficult to analyze due to the uncertainty of how polished surfaces affect microwear. The process of using silicone moulds and resin casts allows for use-wear on top of the polished surface to be microscopically visible for analysis. The Olympus LEXT OLS-4000 Laser Scanning Microscope is being used for the microscopic analysis. The use of the LEXT and 3D metrology allows polished stone tools to be viewed and compared in new ways, which may help to lead to new discoveries about artifact use.

Meyer, Dominique [20] see Vaughan, Andrew

Meyer, Regina (Missouri Army National Guard)

[73] *Discussant*

Meyer, Sabrina (Institute of Evolutionary Medicine, University of Zurich), Frank Rühli (IEM, University of Zurich) and Christian Auf der Maur (Institute of Art History, University of Zurich)

[147] *Archaeo-Anthropological Analysis of the Early to Late Middle Age (7–14th Century) Parish Church and Graveyard from Sursee, Switzerland*

In 1985/86 the parish church of St. Georg, Sursee, was excavated. The archaeological findings showed that the ecclesiastical beginnings of the church date back to the early Middle Ages.

In the early seventh century C.E. a wooden church was built near burials dating back to late antiquity. In total, five occupational phases for the cemetery can be associated with five construction phases (one wooden and four stone phases) of the church. Of the 223 recovered burials, only 119 individuals were anthropologically analyzed (age, sex, body height) due to poor preservation. All age ranges from perinatal to late adulthood were determined. The fact that many infants were buried under the roofline of the church is of cultural significance for this time. Within the studied adult sample both sexes are present in equal numbers.

Additionally, several cases are of paleopathological interest. A hydrocephalic skull of a 5-7 year old child, as well as long-bone fractures and a high percentage of osteoarthritis in the spinal column (all regions affected) were identified.

One of the most important contributions of this study is that it develops our anthropological, paleopathological and cultural understanding of the fascinating transitional era of early Christianity in Medieval Central Switzerland.

Meyer, Dominique (University of California, San Diego), Jamie Hodgkins (Anthropology- University of Colorado, Boulder), Caley Orr (Cell and Developmental Biology- University of Colo), Fabio Negrino (DAFIST- University degli Studi di Genova) and Matthias Czechowski (Archaeological Sciences- University of Tuebingen)

[278] *Using Photogrammetry to Complement and Visualize the Paleolithic Excavation of the Arma Veirana Cave in Italy*

Archaeological excavations are increasingly using digital surveying techniques for better documentation and visualization. Using high resolution imaging systems and UAS (Unmanned Aerial Systems), photographic surveys were completed of the interior and exterior of the Arma Veirana Cave in Liguria, Italy. The aim is to contextualize the excavation within its environment for accurately geo-referencing the excavation trenches and to better understand how Neanderthals lived with respect to their environment. Artifact locations were documented using a total station, and a photogrammetric model was created at multiple excavation depths to help correlate the position and orientation of the artifacts. Exterior modelling of the terrain served for probabilistic analysis of the movement and hunting areas of the Neanderthals. Combining photogrammetry with total station measurements provides large point clouds which represent the environment with providing higher geometric samples in addition to a photorealistic model.

Meyers, Maureen (University of Mississippi)

[8] *Results of the Southeastern Archaeological Conference Sexual Harassment Survey*

In the fall of 2014, the Southeastern Archaeological Conference sponsored a sexual harassment survey of its membership. Goals of the survey were to identify frequency and types of sexual harassment in field situations and identify consequences of such incidences for perpetrators and victims. The survey was also designed to identify if victims of sexual harassment had suffered adverse effects to their career, and to collect longitudinal data on changes in sexual harassment over time. The poster presents the results of the survey and suggests ways to decrease incidents of sexual harassment in the field.

[186] *Discussant*

Meyers, Allan (Eckerd College)

[142] *Landscapes of Slavery and Emancipation on Cat Island, Bahamas*

Although Bahamian plantation archaeology has witnessed considerable growth in the last three decades, no sites of the Loyalist period (c. 1783–1838) on Cat Island have hitherto been systematically studied. An ongoing interdisciplinary project aims to address this omission, and the resulting scholarship will contribute to the island's first heritage management plan. Since its launch, the Cat Island Heritage Project has documented six Loyalist-era sites at the island's southern end. Among these is Golden Grove, a plantation that gained widespread notoriety after an 1831 slave uprising. Recent surveys reveal material culture features across the sites that shed new light on plantation landscapes in the Bahamian colony. The project's long-term goal is to build an interdisciplinary framework for understanding, interpreting, and conserving the physical remains of sites related to slavery and emancipation. It thus embraces an approach to archaeology that privileges local stakeholders. It elevates consultation with descendants, and it employs interpretive frameworks that honor the island's rich tradition of oral narratives. The program invites local participation with an eye toward increasing community investment in the stewardship of cultural heritage.

[142] Chair

Meyers Emery, Kathryn (Michigan State University)

[116] *Preparing Their Deaths: Examining Variation in Co-occurrence of Cremation and Inhumation in Early Medieval England*

The practice of cremation and inhumation can occur within the same cemetery during the same time period. This co-mingling of burial forms is found throughout western history from Mesolithic and Neolithic Europe to Ancient Rome and Greece through the Early Medieval Europe and today. Despite its wide chronological and geographic extent, data-driven study of co-occurrence of burial treatments is limited for a number of reasons; the most problematic being the disciplinary perception that cremation is diametrically opposed to inhumation due to the differences in archaeological deposits of each form, which lend themselves to different theoretical and methodological approaches. This paper examines why co-occurrence has been understudied and potential approaches towards this type of research. Five cemeteries from early medieval England have been selected as case studies since this period offers ample evidence for co-occurrence of cremation and inhumation over two centuries. Through the use of statistical and spatial analysis, variation within and between these two forms of burial treatment are examined and discussed within the broader context of the period. Comparison and discussion of the relationships between inhumation and cremation in early medieval England has the potential to reveal insight into ideological, social, political, and economic variability during this period.

[116] Chair

Meza, Yarely [93] see Hankins, Sharon

Meza-Peñaloza, Abigail [236] see Aguirre-Samudio, Ana

Michael, Amy [116] see Wrobel, Gabriel

Michel, Kelly [64] see Payne, Jennifer

Michelet, Dominique [96] see Nondédéo, Philippe

Micheletti, George (University of Central Florida)

[27] *The Fluidity of Ideology: A Late Classic Architectural Transformation in Plaza A at the Ancient Maya Site of Pacbitun, Belize*

The ceremonial heart of the ancient Maya site of Pacbitun, thriving for the site's entire 2,000 year existence, must have held an enormous amount of cosmological significance to its inhabitants. However, while the sacredness of this location remained constant, the ideology within this space was incessantly in flux. Over the past 30 years, Plaza A excavations have revealed numerous architectural transformations signifying sociopolitical unrest. One such transformation is archaeologically evident in Pacbitun's ceremonial E Group complex occurring sometime in the Late Classic Period (550–700 A.D.). In a recent study, Jaime Awe (2016) recognized that Pacbitun and several other Belize Valley E Groups have been found with unique architecture and an abundant amount of interments implying that these structures act more as eastern shrines than E Group complexes. Attempting to identify defining attributes of E Groups and eastern shrines, a closer inspection of Pacbitun's assemblage has found characteristics that belong to both archetypes. This paper will present evidence to suggest that Pacbitun's ceremonial assemblage was originally constructed as an E Group but later transitioned into a shrine like complex. If this is correct, this transition coincides with other construction activity at the site possibly signifying social and/or political change.

[27] Chair

Micheletti, George [234] see Weber, Jennifer

Mickel, Allison (Stanford University)

[79] *Edges of Teamwork in Archaeology: Network Approaches to Excavation Histories*

Network science has begun to transform how we view systems of people and objects in the archaeological past, but also provides new insight into how archaeologists collaborate to create the archaeological record. Using two longterm excavations as case studies—Catalhoyuk in Turkey and the Temple of the Winged Lions in Petra, Jordan—I demonstrate how network approaches help to visualize and measure teamwork on these archaeological sites. I identify how a person's position in formal site hierarchy relates to their role in transmitting information between team members, map out transformations in team structure over time, and address the consequences of how foreign excavators interact with local laborers.

Mickleburgh, Hayley and Jaime Pagán-Jiménez (Faculty of Archaeology, Leiden University)

[296] *Diet Change in the Ceramic Age Caribbean Archipelago*

This paper addresses temporal changes in dietary practices in the Ceramic Age (500 B.C.–A.D. 1500) Caribbean. Evidence from human dental wear and pathology has indicated a broad shift in dietary practices from the Early Ceramic Age (500 B.C.–A.D. 600/800) to the Late Ceramic Age (A.D. 600/800–A.D. 1500). Comparisons between the two periods revealed significant differences in the rate of dental wear and pathology, suggesting a growing focus on

refined, cariogenic foods, most likely horticultural produce. Paleoethnobotanical studies throughout the region have, in parallel, revealed a broader and more diverse range of plants in Late, as opposed to Early, Ceramic Age assemblages. Although research biases toward the Late Ceramic must be considered, there appears to be a greater emphasis on tuberous plants (as well as sugary fruits) in the Late Ceramic Age. The plant component of the diet tends to be varied across space and time, with no single plant or group of plants dominating assemblages. The combined approach using dental and botanical evidence has provided evidence for temporal shifts in diet in highly diverse island environments. We discuss the significance of these data in the light of diachronic social and climatic changes in the Caribbean islands.

Middleton, William

[125] *Discussant*

Mihailovic, Dušan [146] see Heffter, Eric

Mihok, Lorena (Eckerd College)

[142] *Landscape of Royalization: An English Military Outpost on Roatán Island, Honduras*

During the seventeenth and eighteenth centuries, the English Crown competed with other European imperial powers for control over the land, labor, and materials of the Caribbean. The English Crown came to view the Caribbean as the geographical hub within which it would be able to obtain key resources and to challenge the rapidly growing power of the Spanish Empire. One of the most contentious ports in the western Caribbean was New Port Royal harbor on Roatán Island, Honduras, because of its strategic location across the Bay of Honduras from the Spanish settlement of Trujillo. In 1742, the settlement of Augusta was established as an outpost of English royalization on Roatán Island. In this paper, I utilize the concept of landscape archaeology to explore the spatial organization and artifact assemblages recovered from recent archaeological investigations at Augusta. I argue that Augusta's function as a military outpost in the Bay Islands dictated the colonists' use of the landscape and that the daily routines carried out within the spatial layout reflect this overarching goal.

Milan, Christopher (DePaul University)

[31] *One Thousand Years of Regional Integration: Malpaso and the Role of U-Shaped Temples in Long-Distance Exchange*

Located 31 km from the Pacific, Malpaso is the most inland of 8 U-shaped temples in the Lurín Valley. This form of monumental architecture is associated with the Manchay culture that dominated the central coast of Peru during the Initial Period. Malpaso is also one of only a few U-shaped temples located in the chaupiyunga, a climatic zone that serves as an intermediary between the Pacific coast and the Andean highlands. Consequently, Malpaso shows ties not only to the U-shaped temples of the lower Lurín Valley but also to settlements in the highlands of Huarochiri.

The goals of this paper are twofold: first, I will examine the way that Malpaso united disparate settlements in the middle Lurín Valley; secondly, I will look at how Malpaso integrated the region into a larger valley wide network for exchange. Archaeologists have proposed that U-shaped temples served as civic-ceremonial centers that managed irrigation or controlled small chiefdoms. However, I propose that the main role of a U-shaped temple was to serve a space for large rituals that integrated various populations. Moreover, Malpaso also connected the middle Lurín Valley into a large network of exchange allowing it access to resources on the coast and highlands.

Milbrath, Susan (Florida Museum of Natural History)

[15] *Seasonality in Central Mexican Painted Images of Tlaloc: From Classic to Postclassic*

Tlaloc, the rain god of Central Mexico, has different seasonal avatars in painted imagery. Colonial codices document these variants in veintena festivals recorded to help Spanish friars detect survivals of indigenous religion. Rainy season imagery shows Tlaloc associated with maize plants and agricultural fertility. In contrast, imagery of the dry season emphasizes Tlaloc's mountain aspect, because the rain god withdrew into the mountains to hold back the rainfall. The priests performed mountain sacrifices to Tlaloc during the dry season, and the texts suggest these sacrifices placated Tlaloc so that he would release rainfall during the rainy season. Corresponding dry season images can be recognized in the Postclassic Codex Borgia, which shows Tlaloc in scenes of blood sacrifice with death aspects of the maize goddess. The Borgia shows a different aspect of Tlaloc during the rainy season, one that bestows rainfall and helps fertilize the fields. A similar dichotomy between rainy and dry season imagery of Tlaloc can be seen in mural paintings of the Teotihuacan Storm God. The audience for the Teotihuacan murals in elite apartment compounds was clearly the residents and visitors, but seasonal variations in the Storm God's imagery was certainly well known to the general populace.

[15] *Chair*

Milella, Marco (Institute of Anthropology, University of Zurich), Christopher J. Knüsel (UMR5199 PACEA, Université de Bordeaux, Bâtiment B8) and Scott D. Haddow (Çatalhöyük Research Project, Stanford Archaeology)

[215] *A Neolithic Irregular Burial at Çatalhöyük (Turkey)*

At Neolithic Çatalhöyük, adult burials are usually located beneath platforms within habitations. Middens (waste areas) are, on the other hand, only sporadically used as burial locations at the site and, overall, are consistent with intentional exclusion from platform depositions, therefore representing a form of irregular burial.

Here, we describe a young adult male from Çatalhöyük buried in a midden and presenting several skeletal anomalies (united and unhealed fractures, and bone structural changes) consistent with a diagnosis of fibrous dysplasia. The observed pathological condition, together with his deposition in a midden, suggest a complex scenario, with the individual becoming the focus of special attention, possibly in a negative way, as his physical appearance and behavior would have been altered by the progress of the disease. Altogether, the present case may document a form of disease-related social exclusion and its impact on funerary behavior in a Neolithic society.

Milks, Annemieke (UCL Institute of Archaeology) and Matt Pope (UCL Institute of Archaeology)

[146] *Middle Pleistocene 'Hunting Lesions': Experimental Approaches to an Archaeological Puzzle*

Hunting lesions provide indirect evidence of humans using weapons for subsistence. Potential examples of hunting lesions from the European Middle Pleistocene are limited, having been proposed for one scapula each from the British sites of Boxgrove and Swanscombe. These scapulae, both bearing

semi-circular damaged edges, have been suggested to have been impacted by untipped wooden spears, similar to those from the Middle Pleistocene sites of Schöningen and Clacton-on-Sea. Plain wooden spears from this period represent the earliest weapons in the archaeological record, and are also known to have been used in the Late Pleistocene and Holocene.

The damage on the two scapulae has received little critical evaluation. A number of issues arise in the identification of hunting lesions from wooden spears not only due to the near-lack of an experimentally-generated reference sample, but also due to problems with equifinality. This paper presents ongoing experimental research aiming to better understand damage signatures of wooden spears on bones, actualistic research on how the use of hammerstones to access marrow and grease may mimic hunting lesions, and an assessment of the Middle Pleistocene scapulae in comparison with experimental research and hunting lesions from later periods.

Miller, D. Shane [8] see Anderson, Derek

Miller, Stephanie

[20] *Coba: New Findings and Future Directions of Research*

This paper presents new spatial and cultural data on the Maya archaeological site of Coba. As part of the Political Interaction Project of Central Yucatán, we have piloted a new investigation on the political, social, and economic relationship between the two Maya cities Yaxuna and Coba. These two cities are connected by the longest sacbe in the Maya region, Sacbe 1, stretching 100 km across the peninsula. Understanding the relationship between these two cities will require a multi year and multi site investigation and this paper presents our preliminary findings at one end of the causeway. Topics that will be addressed include new chronological data that sheds light on Coba's greatest period of urban and political development, spatial data on Maya household organization, and artifactual data on domestic economies at Coba. Additionally, methodological issues encountered and proposed resolutions will briefly be addressed. As a conclusion, this paper brings together our findings on Coba to propose ideas on how Classic period Maya state development can be better understood through investigation of household integration.

Miller, Myles (Versar)

[55] *The Middle and Late Holocene Archaeological and Climatic Records of Southern New Mexico and Trans-Pecos Texas: New Insights and New Revelations*

A contextual analysis of 3,989 radiocarbon dates provides unprecedented insights into 8,000 years of prehistoric adaptations and social evolution in the northern Chihuahuan Desert of southern New Mexico and Trans-Pecos Texas. The chronology is particularly robust between 4500 B.P. and historic times, allowing for distinctive subsistence, technological, and social developments to be isolated throughout the terminal Middle Holocene and Late Holocene and corresponding Middle Archaic, Late Archaic, and Ceramic cultural periods. The high-resolution chronology is based on radiocarbon-dated settlements, features, technologies, perishable items, and projectile points and reveals several trends and transitions, including punctuated demographic swings and periods of regional abandonment, shifting lowland desert and upland mountain settlements, and related technological and subsistence developments. The archaeological sequences are then compared to geomorphological sequences, speleothem records, and other proxy paleoenvironmental data, as well as radiocarbon and optically-stimulated luminescence dates from geomorphological and paleoenvironmental studies. The combined archaeological and environmental records provide insights into several topics of archaeological and anthropological significance, including culture-climate interactions, the introduction and spread of maize, and relationships between horticulture and earth oven plant baking, each of which in turn are related to increasing social complexity in the arid lands of the northern Chihuahuan Desert.

[55] *Chair*

Miller, Mary

[209] *Jaina Figurines: A Text without a Text?*

Most Maya figurines have traditionally been evaluated on the basis of style and facture, and more recently, on the basis of archaeological context, where possible, as at Motul de San José, Guatemala. But what about the dozens of Jaina figurines in the Mexican national collections? Is there a way to examine the figurines typically considered to be mothers, lovers, weavers, wanderers, or warriors, almost none of which bear inscriptions, in such a way as to reevaluate the sort of assumptions made about the figurines? Can one generate a text? Particular attention will be given to both the monumental record of the first millennium C.E. and ethnohistoric records of later years.

[58] *Discussant*

Miller, Holly (University of Nottingham) and Naomi Sykes (University of Nottingham)

[134] *Stable Isotopes and the Dynamics of Human-Animal Relationships*

A central focus of stable isotope analysis in archaeology has always been to reconstruct human diet, with faunal samples examined primarily to better understand the human data. This paper will challenge this precept and highlight that important information about human-animal relationships can be obtained from isotope studies if the animals are viewed as individuals in their own right, as opposed to mere background data. Using several species as case-studies, this paper will examine how stable isotope data can inform various human-animal relationships from the past 2,500 years across northern Europe. These studies also highlight an enhanced potential for stable isotope data when used in combination with other sources of evidence.

Miller, Melanie (University of California, Berkeley)

[205] *Exploring Social Differences as Evidenced by Measures of Physical Activity and Skeletal Health in a Muisca Population (950–1400 A.D., Soacha, Colombia)*

The human skeleton is a dynamic tissue that changes over the lifetime in response to particular variables such as an individual's diet, health, sex, and physical activity. Studying human long bones, such as femurs and humeri, for measures of bone quantity and shape can provide insights into the ways that the skeleton reflects the amounts and types of work performed during life. The Muisca, from northern Colombia, are often characterized as highly stratified societies where social differences were strongly marked. One area where social differences may be evidenced is through daily laboring practices, which may be intertwined with social roles such as an individual's status, age, and sex. Human skeletal remains from the archaeological site of Tibanica (Soacha, Colombia; 950–1400 A.D.) were imaged using non-invasive computed tomography (CT) in order to study how bone measures may reflect differential activity patterns between particular social groups (such as females vs. males, young vs. old age adults, etc.). Cross-sectional geometry data indicate significant differences between males and females in both their amount of bone, and the strength and robusticity of their long bones, suggesting that an individual's sex may have delineated the types and amounts of work that one performed.

Miller, Michelle (Louisiana State University) and David Chicoine (Louisiana State University)

[207] *Preliminary Results on Pottery Technology through Macroscopic Classification at the Early Horizon Center of Caylán, Coastal Ancash, Peru*

This poster presents the analysis of ceramic fragments from the Early Horizon center of Caylán, in the Nepeña Valley, Perú (800–1 B.C.). Ceramic fragments constitute a large portion of excavated artifacts, bringing information on chronology, cultural traditions, and exchange networks. Most are undecorated body sherds that are typically ignored in ceramic analyses. Here, we present the macroscopic analysis of ceramic wares from excavated contexts to shed light on patterns of production and potential exchange networks. Discrete categories of pastes are identified based on the composition, size, and frequency of inclusions in each sherd. The results suggest that Early Horizon wares at Caylán were produced by distinct potters using materials from different areas. This emphasizes the possible interactions between multiple foreign and local potters in the manufacture and use of ceramic wares during the Early Horizon.

Miller, D. Shane (Mississippi State University)

[218] *Late Pleistocene-Early Holocene Adaptations in the Lower Mid-South, United States*

The Lower Mid-South has a rich history of archaeological research and provides a valuable dataset for exploring the relationships between climate and culture. Here, we provide an overview of the available paleo-environmental and archaeological data in this area, and argue that there were significant changes in diet, landscape use, and technological organization. The possibility that localized territories are established in the southeast prior to the onset of the Holocene is critically evaluated. We argue that analyses of site distributions indicate an expansion of settlement into areas previously largely ignored, probably a result of population growth during the Younger Dryas and Early Holocene. Temporal trends in regional bifacial technologies and tool stone selection decisions reflect continual modifications of behavioral strategies into the Early Holocene, further indicating that the colonization process was still underway. We conclude by highlighting recent, ongoing research in the region, and provide some future directions for continuing research for this time interval in the Mid-South.

[218] *Chair*

Miller, G. Logan (Illinois State University)

[232] *Earthworks as Landscapes: An Examination of the Sampling Issue in Lithic Microwear Analysis*

Lithic microwear analysis remains a powerful tool for anthropological archaeology by providing insights into stone tool function. As the method continues to mature, practitioners have recently made important advances in documenting and quantifying variation in wear patterns. Since its inception, however, little discussion has focused on the role of sampling in microwear studies. As a result, sample sizes in published microwear reports vary widely. A related issue involves generating a representative sample from the spatial area and temporal period under investigation. Often studies utilize a type site, rather than a landscape, approach that makes it difficult to capture the full range of variation present. A case study from two Middle Woodland Period Hopewell earthworks in southwestern Ohio demonstrates that these issues of sample size and spatial coverage could impact archaeological interpretations. Results reveal a significant positive correlation between sample size and the number of distinct functional tasks identified in an assemblage. Sampling multiple locations within and around each earthwork captured a great deal of variation only discernible through this landscape approach.

Miller, Sarah

[260] *Engaging the Living in Honor of the Dead: the Cemetery Resource Protection Training (CRPT) Program across Florida*

The flagship program to come out of FPAN's Northeast Regional Center, hosted by Flagler College in St. Augustine, is the Cemetery Resource Protection Training (CRPT) workshop. CRPT developed in an effort to curb the mass deterioration of historic cemeteries across the state, particularly in Jacksonville, Palatka, and Fernandina Beach where municipal governments are responsible for their preservation and maintenance. Outcomes of CRPT were the subject of a recent AAP article (Miller 2015:275-290) but the challenges are on-going and subject to great change after local elections. This paper will describe the CRPT program, present the most challenging cases to date, and deliberate how to stay the course through political and economic change.

[260] *Chair*

Miller Wolf, Katherine [130] see Wolf, Marc

Miller Wolf, Katherine (Indiana University East) and Timothy Pugh (Queens College, City University of New York)

[291] *The Bioarchaeology of Colonization and Missionization at San Bernabé, Lake Petén Itzá*

The Spanish established the San Bernabé Mission in the heartland of the Itzá Maya area at Tayasal in the Petén Lakes region around 1710. Census data suggest that the mission was at the center of a multi-cultural community of 126 individuals in 1712, yet within three decades the population size had reduced by 70% potentially due to epidemics and flight. Excavations by the Tayasal Archaeological Project have recovered 46 individuals from 33 graves in the mission's cemetery that shed light on what occurred after the arrival of the Spanish to the region. The skeletal remains of those interred within the walls of the mission highlight the impact of cultural contact, colonization, and the subsequent missionization of an indigenous group. The bioarchaeological analysis of the San Bernabé sample reveals that life in San Bernabé was one of sickness, disease, and a short life expectancy. Skeletal data that informs us about colonization is not often available, especially for Mayanists, and the case of San Bernabé provides clear data about the deleterious impact that colonialism had on the Maya.

Miller-Atkins, Galen and Luke Premo (Washington State University, Max Planck Institute)

[272] *Local extinctions and regional cultural diversification in time-averaged assemblages*

Modern human behavior, including regional cultural differentiation, has traditionally been characterized as a relatively recent phenomenon despite evidence of modernity before 50,000 years ago from the Paleolithic record of Africa. Researchers interested in how demography might improve our interpretation of the archaeological record have shown that the rate of local group extinctions can affect neutral cultural diversity and the rate at which copy errors accumulate in structured populations. However, it remains unknown whether a high rate of local extinction affects time-averaged archaeological assemblages—not just populations—in such a way as to inhibit what archaeologists might recognize as regionally distinctive cultural traditions. Here, we discuss results from a spatially explicit agent-based model designed to address the effect of local extinctions on regional differentiation in selectively neutral culturally transmitted traits in artificial archaeological landscapes. We employ local indicators of spatial association at multiple spatial scales to

assess the extent to which the spatial scale of the regional "traditions" recovered from the archaeological data expand or contract as a function of local group extinction rate. We also assess the extent to which time-averaging regulates the effect of local extinctions on regional cultural differentiation in assemblages.

Miller-Sisson, Misha [20] see Matsumoto, Mallory

Miller-Sisson, Misha (University of California San Diego)

[88] *Identity and the Maya Mid-level Elite as a Proxy for Political Change*

The nuances of identity theory can be a helpful in determining social stratification within a site and determining intrasite political processes. Archaeology is specially suited for identity studies due to the nature of material culture as an integral part in social practices. While individual identities are difficult to parse out under the best circumstances, analysis of artifact distribution across a site can yield insight into group identities and the practices that follow them. Designation of group identities along both vertical and horizontal hierarchical axes can allow for larger analysis of political processes by noting changes within both alignments. The Maya site of Uxul presents an appropriate case study for utilizing identity theory to examine shifts in political power across hierarchal axes within a site due to the documented changes in political structures that occurred at the site in the Late Classic (650 A.D.). These political shifts are documented in the hieroglyphic record of the site when with the incursion of the Ka'an polity in the Late Classic. Analysis of the changes in archaeological assemblages between different groups in Uxul highlight the intrasite shifts in power and identity that coincided with the larger political change.

Millhauser, John K. [27] see Antorcha Pedemonte, Ricardo

Millhauser, John K. [86] see Alcantara, Keitlyn

Mills, Barbara (University of Arizona)

[17] *Chaco and Hopewell: Redefining Interaction Spheres through Multiscalar Network Approaches*

Chaco and Hopewell are two of the most well studied archaeological regions in North America. Although Chaco is often compared to Cahokia, comparison to Hopewell brings out important ways in which extensive regional connectivities were formed through the intersection of religious, political, and economic networks. Both societies show evidence of periodic, eventful monumental construction; spatial connectivity through roads/causeways; long-distance procurement of materials; production and deposition of large quantities of inalienable objects; spatially distinctive collective burials; and the replication of architectural units and spatial communities across large areas. Although they differ in many ways, the term "interaction sphere" has been applied to both regions but this term is amorphous and sidesteps the ways in which materials and practices were embedded within multiple kinds of networks and their historical relationships. Current relational approaches in archaeology, including formal network analyses, offer alternative ways of looking at social and spatial connectivities, especially when combined with theoretical approaches that foreground how religious ritual, ideology, territoriality, social diversity, and inequality intersect. The participants in this session address these connections to provide multiscalar interpretations of the Chaco and Hopewell worlds, their origins, and their transformations.

[201] *Discussant*

[17] *Chair*

Mills, Barbara [17] see Peeples, Matt

Milne, Brooke [214] see Gamble, Julia

Minc, Leah, Jeremias Pink (Oregon State University) and Veronica Perez Rodriguez (University at Albany - SUNY)

[169] *Evaluating the Evidence for Ceramic Exchange with the Valley of Oaxaca during the Late to Terminal Formative*

In the Mixteca Alta region of Oaxaca, Mexico, ceramics resembling those found in the Valley of Oaxaca are a common component of Late to Terminal Formative assemblages. Prior compositional analyses indicated that at least some of these wares represent actual imports, and further, that ceramic trade between the two regions was possibly two-way. More recently, our knowledge of ceramic compositional variability in the Valley of Oaxaca has expanded greatly, allowing us to refine our understanding of potential source areas for ceramics exported to the Mixteca Alta. Here we report on a sample of 53 Late to Terminal Formative ceramics from Cerro Jazmin; these represent wares traditionally thought to be Valley of Oaxaca imports or imitations (gris and café fino) and wares thought to be of local manufacture. In order to identify possible imports and their sources, compositional data for these materials were evaluated against contemporaneous ceramics from the Valley of Oaxaca as well as a valley-wide database of natural clays previously analyzed at the OSU Archaeometry Laboratory. The project serves to expand the compositional database for Formative ceramics from the Mixteca Alta region, and contributes to research on ceramic trade and exchange between the two regions.

Mires, Ann Marie and Claire Gold (Lecturer, Clark University and Bay Path University)

[187] *Being Found: A Fundamental Human Right*

The National Institute of Justice (NIJ) database lists approximately 100,000 missing persons in the United States. Many of the people who go missing in the United States are victims of homicide. In many cases, the investigation begins only when human remains are found. DNA technology has helped decrease the number of unidentified cases but still, many "unfound" cases remain unsolved. Victims of homicide have no choice as to where their bodies are placed and often suffer violations before and after death. They suffer an injustice to their basic human right to live. Families of the unfound often suffer from physical ailments due to the unresolved fate of their unfound loved one. The number of unfound individuals in the United States surpasses the scale of a mass disaster and should be viewed more accurately as a crisis in human rights. Forensic Archaeologists are specialists who provide technical assistance in the recovery of human remains at forensic scenes, mass disasters, and human rights violations. Specialists in this field can add information to unfound cases normally handled by law enforcement. Legislation that addresses the plight of the thousands of unfound cases should be given priority.

Misarti, Nicole [204] see Alfonso-Durruty, Marta

Missal, Kele [214] see Monnier, Gilliane

Mitchell, Ammie (SUNY at Buffalo Anthropology Department)

[41] *A Petrographic Examination of Early Ceramic Crushed Rock Tempers*

As part of her ongoing dissertation research, the author conducted a series of experimental tests to examine the physical properties of coarse crystalline rocks. Common coarse crystalline rocks in the Northeast include granite, granodiorite, and gabbro. Earlier petrographic studies by the author identified these rocks as common tempering agents in early ceramic vessels in New York. The author hypothesized that these rocks were intentionally collected by potters from glacial land formations and the rocks were actively processed into temper through intense heating and crushing actions. Rocks may have been collected, placed and later recycled from high-temperature features, such as hearths and earth ovens for the purpose of creating temper. The null hypothesis of this study is that potters selected previously eroded and weathered rocks because they were easily obtainable and crumble with minimal effort into grit for temper. The author used petrography to examine individual mineral weathering, alteration and fracturing within each sample. Twenty coarse crystalline rock samples were fired in both closed kiln and open pit firing at various temperatures and durations. The minerals within the experimental samples were compared to archaeological samples of grit-tempered Vinette pottery from various sites across New York State.

Mitchell, Juliette (University of Aberdeen) and Gordon Noble (University of Aberdeen)

[103] *Mapping, Monumentalizing and Protecting the Barrow Cemeteries of Eastern and Northern Scotland*

In later Iron Age Scotland, the Picts begin to bury their dead under barrows and cairns, but the social, ideological, and political triggers for this change in burial practice are unclear. One of the reasons is that the archaeological data has never been properly synthesized. No written sources exist in Scotland at this time so the archaeological data represents an important untapped resource. This talk will look at monumentalisation of Pictish barrow cemeteries and their relationship to routeways and settlements. It will include GIS analysis of transcribed aerial photographs showing crop mark data, which enables a much more robust assessment of routeways, boundaries and territories around the cemeteries.

Mitchell, Peter

[223] *'I Rode through the Desert': Equestrian Adaptations in Southern Hemisphere Arid Zones*

The 'Columbian exchange' set in motion by Europe's fifteenth- to nineteenth-century expansion overseas has produced some of the most far-reaching biological and cultural changes of the entire Anthropocene epoch. One of the most widespread aspects of its exchanges was the introduction of the horse to parts of the world where it had previously been absent. Alongside the internationally well-known Plains of North America, these regions included several southern hemisphere arid zones: Patagonia; the Karoo and Kalahari of southern Africa; and the deserts of Australia. This paper explores the equestrian adaptations developed by the Indigenous inhabitants of these three areas and tries to explain the variability apparent in the timing, scale, nature, and consequences of their adoption of the horse.

[295] *Discussant*

Mitchem, Jeffrey (Arkansas Archeological Survey), Jami J. Lockhart (Arkansas Archeological Survey) and Timothy S. Mulvihill (Arkansas Archeological Survey)

[225] *Investigating Mississippian Site Layout and Architecture in Northeast Arkansas*

In June 2015, the Arkansas Archeological Society Training Program was held at the Richards Bridge site. This Parkin phase village lies along the Tyronza River and was contemporaneous with the Parkin site, located about 16 km away. Geophysical studies revealed well-preserved structure floors at Richards Bridge and four of these were chosen for excavation to see if their construction was identical to those at other Parkin phase sites. A search for fortifications revealed a wooden palisade, but no defensive ditch or moat was present. The lack of a surrounding ditch makes Richards Bridge the first known Parkin phase site without one.

[260] *Discussant*

Mixter, David W. [125] see LeCount, Lisa

Mixter, David (Washington University in Saint Louis)

[235] *Activity Area Analysis of Terminal Classic period Civic Architecture at Actuncan, Belize*

Researchers have long hypothesized that the 9th century Maya collapse resulted in the end of divine kingship as the dominant political form in the southern Maya Lowlands. In post-royal settlements, tall pyramids and labyrinthine palace spaces are deemphasized in favor of more publically-accessible open courtyards and broad platforms. Some scholars have argued for the increasing prevalence of council houses based on architectural layouts and the iconography of sculptural programs. However, little research has confirmed this interpretation with data on the actual activities that took place within post-royal public architecture. Traditionally, archaeologists who study the Maya have had difficulty understanding the daily function of public architecture due to the paucity of artifacts recovered in situ on occupation surfaces. Recent studies of geochemistry and microartifacts from occupation surfaces indicate that microscopic proxies can be used to reveal the activities that took place in these spaces. This study draws on the spatial interpolation of geochemical and microartifact data to understand activities that occurred on a civic platform constructed during the Terminal Classic Period. By comparing the results of this research to similar studies of activities in Classic period palaces, I elucidate changes in the role of leaders after the failure of divine kingship.

Mizoguchi, Koji (Kyushu University, Japan)

[10] *Heritage in Post-Modern Settings: The Case of Japan*

The 'post-modern' condition can be characterized by reflexivity, by which is meant that every social fact is scrutinized as socio-historically constructed. The spread of this 'attitude' fundamentally destabilize the sense of the authenticity of heritage. However, as long as we have to accept this constitutive element of social reality, we have to consider how to come to terms with this and how to better utilize this for the betterment of our relationship with heritage and of our life-world. This poster introduces some innovative attempts of achieving that goal from Japan, and proposes some future directions in the 'use of

heritage' for the future.

Moates, Jeff [260] see Rudolph, Nigel

Moates, Jeffrey (FPAN)

[260] *Understanding Archaeological Site Protection at the Local Level in Florida*

Archaeological sites face many threats in Florida. While both natural and cultural forces are at play the most destructive threat might be inaction at the local level from the professional and amateur archaeology communities. Local preservation programs began in earnest with the passage of state laws aimed at managing and regulating growth in the state and have continued largely through the implementation of the Certified Local Government Program. However, an apparent lack of a clear understanding of archaeology and best management practices at the local level has left archaeological sites to be sorely underrepresented in local government preservation programs and woefully unprotected under local ordinance. This presentation details some of the initiatives undertaken by FPAN to bring together information on local level preservation ordinances throughout the State of Florida, work with local governments on their management of archaeological sites, and create a clearing house for preservation ordinances and locally designated sites and resources.

Moe, Jeanne (Project Archaeology-BLM)

[71] *Archaeology Education for Children: Measuring Success and Avoiding Pitfalls*

In the past 30 years, archaeologists have taught children and youth about the processes of archaeological inquiry and the results of archaeological research. Hundreds, if not thousands of education programs have sprouted over the last 30 years; some have endured while others have faded away. Some efforts and programs are aimed at formal learning in school classrooms while many others are based in informal settings such as museums, outdoor learning centers, after-school programs, and many others. A few of these programs have been assessed for learning outcomes, while many others have not. For example, all Project Archaeology education materials are intensively assessed in classrooms and peer reviewed prior to release. Program assessment is critical for the long-term success and sustainability of archaeology education. This paper will examine the history of archaeology learning assessment in both formal and informal settings. Based on these data the efficacy of formal and informal learning venues will be compared. Development of assessment instruments, guidance for implementing materials with fidelity in specific learning venues, effective piloting, and formulating research testable questions will be provided.

Moffett, Abigail Joy [107] see Chirikure, Shadreck

Mol, Angus [220] see Hofman, Corinne

Mol, Angus

[247] *The Deep Structure of Dependency: Relational Data and Heuristics in Archaeology*

The last decade has seen a rise in archaeological studies addressing network concepts, models and dynamics. These studies cover a range of archaeological approaches and subdisciplines, from the conceptual, like Actor Network Theory (ANT) to the formalized, like Agent Based Modelling (ABM), as well as frameworks that have connected archaeological theory and network methods, like Knappett's Archaeology of Interaction and Hodder's Entanglement.

What all of these studies have in common is an emphasis on relations and, more specifically, the analysis or interpretation of the dependencies between archaeologically observable phenomena. With this comes an heuristic that is often obscured, but is itself based on a multi-scalar and pluriform set of dependencies: mutually supportive hypotheses or theories built on multi-disciplinary data-sets, applicable to scales of analysis from microscopic to interregional.

By examining a number of classical and more recent studies taking a network approach, this paper will review how archaeology has handled this "deep structure of dependency" and seeks to provide an answer to the question how disparate studies seeking to understand the connected past can lead to consilience of knowledge.

Molano, Shaina (UC Merced)

[276] *A Geometric Morphometric Analysis of Cranial Vault Modification in Ancash, Peru*

Cranial vault modification is a cultural practice used throughout much of the Andes and study of body modifications is a powerful tool for understanding group identity, social structure, and status. Different modification types have been found in the prehistoric Ancash region of north-central Peru, although the significance of this practice has yet to be further explored in the area. As cranial modifications are variable by nature, quantitative assessment of different vault shapes allows for the determination of presence of modification and may also allow assessment of types as well as the degree of variation within modification type. Together, this information can help elucidate the potential identities being conveyed. Here, I present results from a small-scale metric study based on crania excavated throughout Ancash. Geometric morphometric methods were utilized in addition to traditional metric approaches in order to quantify the morphology using strategic landmark and semi-landmarks. Analysis of 100 modified crania shows significant variation in cranial shape between modified and unmodified individuals, but also between types of modification as well as, most interestingly, internal to each type. Geometric morphometric methods were particularly fruitful, and future research looks to encompass a large-scale examination of cranial modification in Ancash using this approach.

Mollard, Belinda [254] see Bautista, Giovanni

Mollenhauer, Jillian (Metropolitan State University of Denver)

[209] *Materiality and Meaning in the Formative Gulf Lowlands*

In Formative Mesoamerica the built environments of San Lorenzo and La Venta became unique topographic assemblages combining local and regional

materials drawn from riverbeds, salt domes, nearby hills, and distant volcanic peaks. These sites can be viewed as microcosms of their regional landscapes, incorporating natural forms and geographic referents as a way to manifest elite authority over the natural and human worlds. Integrated into these architectural settings were large-scale sculptures crafted of various stone types and sources. The material properties of these sculptures served to connect Olmec centers with the regional sacred landscape while simultaneously harnessing and transforming its spiritual power into political authority. In the ephemeral environments of earth, sand, and clay that comprised most Olmec site architecture, the stones imported to these centers persisted through time and space to reify and naturalize the histories of the Olmec elite. The materiality of Olmec sculptures and their settings will be explored in this paper to demonstrate how Gulf lowland elites manipulated the ideological and phenomenological properties of stone as a means of exercising their control over the landscape and its inhabitants.

Monaghan, G. William [285] see Pike, Matthew

Mongelluzzo, Ryan (San Diego Mesa College)

[27] *Variation in the Architectural Morphology of Ancient Maya Palaces*

Ancient Maya palaces from the Classic Period exhibit a high degree of similarity in terms of architectural layout. While the significance of the similarities has been explored previously, the differences have not been understood as well. This paper attempts to explicate differences in morphology and begin to understand their meaning.

Monjeau, Adrian [272] see Lanata, Jose

Monnier, Gilliane (University of Minnesota), Kele Missal (Department of Anthropology, University of Minnesota) and Ellery Frahm (Department of Anthropology, University of Minnesota)

[214] *Non-Destructive, In Situ Lithic Residue Analysis via FTIR Microspectroscopy: First Results*

Lithic residue analysis is undergoing a methodological shift as analysts introduce new methods designed to improve the objectivity of residue identifications. Fourier-Transform Infrared (FTIR) microspectroscopy has been shown to have tremendous potential in this regard. This method is nondestructive, can provide precise identifications of molecular compounds and minerals, and can be carried out in situ—directly on the residues—without removing them from the stone tools. However, the optical properties of residue materials, such as their absorption coefficients and refraction indices, affect the resulting FTIR spectra, making it difficult to compare them with existing standards. In addition, when residues are thin enough that the beam penetrates through to the underlying stone substrate, the optical properties of the underlying stone affect the resulting spectra. In this paper we present the initial results of a project designed to 1) produce a set of FTIR reflectance spectra standards on 15 common organic and inorganic residue types, and 2) document the changes that appear in the spectra of residues placed on a variety of different stone substrates.

Monroe, J. Cameron (University of California, Santa Cruz)

[177] *"More Field Than Habitation, AND Far More Fallow than Field": Settlement Patterns, Farming Practices, and Demographic Change on the Abomey Plateau, Republic of Bénin*

Archaeologies of urbanism in West Africa have long focused on major cities associated with expansive kingdoms and empires of the second millennium A.D. In recent decades, however, archaeologists have turned to the countryside for an alternative view on urban dynamics in this period. Yet, for most of the forested region this shift has been hampered by the problem of identifying sites, both large and small. This difficulty arises from the combined effects of dense vegetation, poor site preservation, and farming practices that generate low density blankets of artifacts around sites. Archaeological survey recently completed on the Abomey Plateau of the Republic of Bénin adopted an artifact and feature-based approach to redress this issue. Adopting GIS-based spatial analytical tools, this paper presents a method for distinguishing low density settlements from intensive farming practices, significantly advancing our understanding of settlement patterns, farming, and demographic change on the Abomey Plateau in the second millennium A.D.

Monroe, Cameron [183] see Simon, Katie

Monteiro, Patrícia (NAP - Universidade do Algarve)

[49] *Charcoal Analyses Unraveling Cabeço da Amoreira Muge Shell Midden (Portugal)*

Cabeço da Amoreira is a Mesolithic shell midden located near the Tagus river, 60 km from Lisbon, central Portugal. Charcoal analyses are an important tool to identify the wood used for fuel and therefore, understand the relationships between human societies and their landscape. Charcoal is abundant in the Cabeço da Amoreira shell midden. It is present in every context of the site, being part of its occupation horizons and formation processes. Here we present the results from charcoal analyses carried out in several contexts of the shell midden as well as preliminary results on charcoal distribution. The results show that although the main pattern of use of Pinus and Quercus seems to occur during the occupation of the site, minor taxa vary in some contexts. The variation in charcoal distribution also indicated some concentrations in well preserved areas of the shell midden.

[49] *Chair*

Montero García, Ismael Arturo [294] see Helmke, Christophe

Montero Mejía, Gabriela [264] see Pool, Christopher

Montgomery, Shane (University of Central Florida)

[270] *On the Back of the Crocodile: Extent, Energetics, and Productivity in Wetland Agricultural Systems, Northern Belize*

Wetland agricultural techniques have been successfully employed in a variety of environmentally and climatically diverse landscapes throughout prehistory. Within the larger Maya region, these features figure prominently in the region comprised of Northern Belize and Southern Quintana Roo. Along the banks of the Hondo and New Rivers, the ancient Maya effectively utilized wetland agricultural practices from the Middle Preclassic to the Terminal Classic periods. A number of past archaeological projects have thoroughly examined the construction and impact of these swampland features; after four decades

of study, a more precise picture has formed in relation to the roles that these systems played in the regional development of the area. However, a detailed record of the full spatial extent, combined construction costs, and potential agricultural productivity has not been attempted on a larger scale. This paper will highlight these avenues of interest as obtained from high and medium resolution satellite imagery and manipulated through GIS. The research will explore environmental factors and topographic elements dictating the distribution of such entities, the energetic involvement required to construct and maintain the systems, and the efficiency of wetland techniques as compared to traditional milpa agriculture.

Montiel, Rafael [236] see Aguirre-Samudio, Ana

Montoya, Eduardo [57] see Delgado, Mercedes

Montoya, Amy (Museum of Indian Arts & Culture), Diana Sherman (Museum of Indian Arts & Culture), C. L. Kieffer (Museum of Indian Arts & Culture), Julia Clifton (Museum of Indian Arts & Culture) and Maxine McBrinn (Museum of Indian Arts & Culture)
[265]

Exploring Archaeological Collections and Research Possibilities at the Museum of Indian Arts & Culture

The Museum of Indian Arts and Culture (MIAC) acts as the Repository for the State of New Mexico, curating archaeological materials from Federal, state, and tribal lands, and private donations. The Archaeological Research Collections (ARC) is the museum's largest collection, with Paleoindian through historic material from New Mexico and the greater Southwest. The collection is housed at the Center for New Mexico Archaeology, a new state-of-the-art facility shared with the Office of Archaeological Studies that allows for outreach, training and workshops, as well as a spacious laboratory for visiting researchers.

The material is representative of a long period of collection by archaeologists, including sites excavated by Edgar Lee Hewett during the early 1900s, through Works Progress Administration projects, to modern excavations. ARC contains an estimated 8 million artifacts and samples, approximately 35,000 individually cataloged artifacts, and more than 250 linear feet of accompanying notes, maps, and photos. In addition to the archaeological collection, the H. P. Mera Room and the Archaeological Pottery Project offer comparative collections for ceramics, lithics, mineral specimens, and petrographic slides. MIAC is also home to the Laboratory of Anthropology Library, which contains 35,000 items focusing on the greater Southwest and the Sylvanus Griswold Morley Collection.

Monz, Lauren [219] see Hubert, Erell

Moore, Katherine (University of Pennsylvania) and Kurt Rademaker (Northern Illinois University, University of Tubing)

[62] *Hunter's Paradise or Hypoxic Wasteland? Recent Research in the Pucuncho Basin, Peru*

Mountain regions above 4,000 m have been considered marginal because of low temperatures and low primary productivity compounded by the physical stress of hypoxia. Yet, the archaeological record of the puna (grasslands above 3,800 m) of the Andes demonstrates widespread, persistent occupations by hunter-gatherers. The intensity and seasonality of these occupations offer insights into these regions of Peru and of the entry of people into South America more generally. New excavations at the rockshelter of Cuncaicha (Arequipa) dating to as early as the Terminal Pleistocene are compared with sites in Junin dating to the Early Holocene. Together, these sites attest to the procurement of food (especially animals) and lithic raw materials in an environment strongly conditioned by the availability of water. Where rainfall or topography allowed a combination of natural pasture and wetland patches to develop, the constraints of altitude and temperature seem to have been of minor importance. At Cuncaicha, exchange of materials to distant coastal sites dated to the Terminal Pleistocene; this is a less obvious pattern in the Junin sites. These observations open larger questions about the sustainability of local high altitude forager occupations and the complementarity of activities and resources with regions at immediately lower altitudes.

Moore, Lorna (University of Colorado Denver)

[62] *Genetic Adaptation to High Altitudes: What Genotypes and What Phenotypes are Involved?*

The question of whether human populations have adapted genetically to high altitude (HA) has been of interest since studies began there in the early 1900s. Throughout the 20th century the dominant paradigm was that the major physiological attributes of HA residents were acquired during development or reflected other shorter-term processes. With the advent of genomic technologies and statistical methods for detecting genetic evidence of natural selection, a paradigm shift and an exponential rise in the number of publications reporting genetic adaptation in HA populations has occurred. Yet three key questions remain. First, are the current inhabitants of HA regions genetically related to prehistoric inhabitants? Second, are convergent or divergent evolutionary processes involved in genetic adaptation to HA? And third, what is the relationship between the genes (or genomic regions) and the particular physiologic traits of HA residents? The latter is probably the most difficult of all and requires not only more complete, whole genome sequencing but also more explicit testing of the particular pathways by which selected-for gene regions are acting.

Moore, Katherine [122] see Bruno, Maria

Moore, Christopher (SRARP-SCIAA), Mark Brooks (SRARP-SCIAA, USC--Retired) and I. Randolph Daniel Jr. (Department of Anthropology, East Carolina University)

[218] *Late Pleistocene and Holocene Abrupt Climate Change and Human Response in the Southeastern United States*

As a result of the analysis of high-resolution global and regional paleoclimate records, we now know that our "stable" Holocene climate has been punctuated with periods of rapid and synchronous change, including rapid changes in temperature, available moisture, and vegetation. Far from being a period of climatic stability, recent studies suggest abrupt climate change during the Holocene including departures in temperature and precipitation with millennial-scale cyclicity that operates independently of glacial/interglacial climate. Recent geoarchaeological evidence from the South Atlantic Coastal Plain has provided evidence for regional-scale burial processes likely operating on millennial time-scales and in response to regional if not global perturbations to the climate system. This evidence includes a limited but pervasive signature of landform aggradation over the Holocene in a variety of depositional environments and geomorphic settings. Periods of rapid climate change and resulting ecological and environmental disruption are implied. In this paper, we examine the evidence and discuss the possible behavioral responses of Late Pleistocene and Holocene hunter-gatherers to rapid climate change events in the Southeast.

Moore, Elizabeth

[265] *Research and Collections at the Virginia Museum of Natural History*

The Virginia Museum of Natural History (VMNH) is an AAM accredited museum that serves as the state repository for natural history collections and occupies a purpose-built structure completed in 2007. As the state museum under the Secretary of Natural Resources, VMNH curates over 10 million archaeological, biological, paleontological, and geological specimens in trust for the citizens of the Commonwealth. The archaeology department currently curates over one million specimens. While the archaeology collection contains prehistoric and historic site assemblages from throughout Virginia's past, VMNH has several significant assemblages from Paleoindian and Archaic contexts. Archaeology collections have been acquired through VMNH sponsored research, through the rescue of orphaned collections (primarily from universities), and from firms conducting CRM research and compliance projects. In addition, the archaeology department has developed skeletal reference collections for zooarchaeological research using the in-house skinning lab and dermestarium which includes extensive mammal, bird, bivalve, and gastropod collections and we are beginning to add herpetology and fish specimens. Visiting researchers can arrange for space to work and access to the research collections, reference collections, a rapidly growing research library with ca. 8000 volumes, prep lab, and a variety of microscopes and digitization tools.

Moraes, Bruno (Universidade Federal do Amazonas - UFAM (Brazil))

[23] *The Middens, the Terraces and What Lies in Between: A Test for the Middenscape Model of Terra Preta Formation at the Mouth of the Xingu River*

Remarkable marks of an intense occupation in precolumbian times, the Amazonian Dark Earths are spread ubiquitously over a large area in the Amazon River basin. Despite being products of human interaction with the landscape, the differences between each one of them can be significant in terms of its physical and chemical properties, probably reflecting a diversity of both cultural and natural processes which they were exposed. As the increasing studies in Amazonian Archaeology the processes of formation of ADEs constitutes an important case to understand how these groups interacted with their environment, intensively transforming their landscape. This presentation aims on the spatial analysis of the data collected in two ADE sites, in the mouth of Xingu River, testing a hypothesis that accumulated and processed refuse from the daily activities from households (middens), in opposition to the ever swept public areas (terraces) was responsible for the actual features seen in these places.

Moralejo, Reinaldo (CONICET-Argentina. División Arqueología, Museo de La Plata, UNLP.) and Milagros Aventín Moretti (División Arqueología, Museo de La Plata, UNLP.)

[233] *The Inkas and the Sacred Landscape of The Shincal of Quimivil, Northwestern Argentina.*

Throughout history, societies have had a particular worldview and a sense of what's sacred, so that in each time and space they have expressed in different ways their own awareness of an origin and a destiny. The objective of this paper is to describe and to analyze the sacred Inka landscape in one of the southernmost "New Cuzco" capital of the Kollasuyu: The Shincal of Quimivil, located in the province of Catamarca, Northwestern Argentina. The mythical stories of the Inkas tell that there was a sacred coexistence and a balance between nature and mankind, giving both meaning and organization to time and space, providing foundations and coherence to society. In The Shincal of Quimivil one can see several indicators of this principle of landscape organization. The approach we used consists of the micromorphological analysis of each site component. This analysis not only allows us to grasp each element in detail, but also to understand it as part of an integrated system that had as its main purpose to symbolically replicate the Cusco capital as a model of hegemonic and territorial appropriation.

Morales, Pedro [20] see Casar, Isabel

Morales-Arce, Ana

[275] *An Ancient Mitochondrial DNA Approach to Explore Precolumbian Inhabitants Ancestry at Paquimé, Casas Grandes*

The genetic analysis of different periods in specific spatial territories could contribute to understand patterns of interactions for pre-Columbian populations that lived in northwest Mexico. Especially for those sites that show debated cultural traits such as Paquimé, the use of all possible bioarchaeological approaches may be key to identify their population ancestry, affinities, and to evaluate possible migrants origin. This research analyzes ancient mitochondrial DNA, HVI and HVII, of 14 individuals from Paquimé to assess their biological affinities in contrast with ancient DNA reports from southwestern United States and southern Mexican populations. The corresponding achievements and challenges of this method for these specific samples will be exposed. This research's intention is to contribute to the understanding of theoretical patterns of migration and/or cultural fusion populations through contrasting material culture evidence of social changes and genetic consequences, especially for the Medio Period.

Moran, Elizabeth (Liz) (Christopher Newport University)

[15] *Sacred Consumption: Food and Ritual in Aztec Art and Culture*

This paper is about food, its depiction in Aztec art, and its ritual use in Aztec culture. Integral to a society on many levels, food is often a cultural reflection, mirroring what is significant to a particular group. The representation of food and its consumption is prevalent in the surviving artworks created in various media by the Aztecs of Central Mexico in the fifteenth and sixteenth centuries. The symbolic use of food and consumption is also evident in Aztec ritual, another subject recorded in several sixteenth-century sources of both native and European origin. This study focuses on the series of eighteen public ceremonies that the Aztecs performed throughout the year. Called *veintenas* by Spanish chroniclers, these ceremonies are connected to both the agricultural cycle and the 365-day solar calendar. The way food was incorporated in *veintena* ceremonies is significant; sixteenth-century sources record the use of food not only as a part of the feasting, but as a part of the ritual performances organized by the Aztecs. This investigation hopes to examine and compare the use and depiction of food as ritual in various sixteenth-century written and painted manuscripts. Additionally, the question of audience will be addressed.

Moran, Kimberlee (Forensic Outreach)

[187] *Chair*

Morehart, Christopher [236] see Pacheco-Fores, Sofia

Morehouse, Rebecca (Maryland Archaeological Conservation Laboratory), Sara Rivers Cofield (Maryland Archaeological Conservation Laboratory) and Erin Wingfield (Maryland Archaeological Conservation Laboratory)

[265]

Yes! You Can Have Access to That! Increasing and Promoting the Accessibility of Maryland's Archaeological Collections

Eighteen years ago, the State of Maryland's archaeological collections were moved into the Maryland Archaeological Conservation Laboratory (MAC Lab) at Jefferson Patterson Park and Museum in Southern Maryland. This was an important step towards improving the storage conditions of the Maryland collections, but it did little to make the collections more accessible. Understanding the need for better access to archaeological collections, MAC Lab staff spent years rehousing, inventorying and conserving collections to make them more available to researchers, students, and other institutions for study, education, and exhibit. This poster will highlight the various approaches the MAC Lab has taken to not just increase, but to also promote, access to the Maryland collections through outreach programs, exhibits, and online research tools.

Moreiras Reynaga, Diana (The University of Western Ontario)

[236]

What Did the Sacrificed Subjects Eat? A Stable Isotope Study of Individuals Sacrificed by the Aztecs during the Late Postclassic period

This poster introduces my doctoral research project which entails a stable isotope analysis of human sacrificial subjects recovered from the Aztec capital city of Tenochtitlan and its sister city Tlatelolco (present-day Mexico City) dating to the Late Postclassic period (A.D. 1400–1519). The collections include adult and subadult sacrificed individuals from the Templo Mayor and Templo R. This research focuses on expanding our knowledge about dietary and mobility patterns of sacrificial subjects during Aztec times. For the purpose of this poster, I focus particularly on the dietary component of this study by introducing specific research hypotheses and discussing preliminary stable isotopic results in relation to the diets of those who were once offered to the Aztec gods.

Morell-Hart, Shanti (McMaster University)

[212]

Cuisine at the Crossroads

Investigations at sites across Northwestern Honduras—inside and outside of the Maya area—have uncovered diverse food practices and ingredients. As with other more durable goods, there is evidence of transformation over time, and the movement of elements across the landscape. Some foodways were never adopted in regions where they came to be readily available (considering the general flow of species and materials) while others were quickly adopted but in novel ways. Evidence points toward dynamic overlap between northern and southern societies, with northwestern Honduras serving as a sort of regional crossroads.

In this paper, I compare cuisines from several ancient communities within and near the Copán area, drawing primarily from a rich archaeobotanical data set that includes both microbotanical and macrobotanical residues. I briefly address the political and historic context of each community, and provide abridged biographies of the main taxa addressed. Of particular interest will be maize, palms, lerén, sweet potato, and manioc, as well as several herbaceous species. I pay close attention to shifts in food traditions, as well as the persistence of certain aspects of cuisine over time, addressing how they are tangled in broader political and economic currents.

Morello, Flavia [204] see Alfonso-Durruty, Marta

Morello Repetto, Flavia (Instituto de la Patagonia, Universidad de Magallanes), Jimena Torres (Université de Paris I, France), Victor Sierpe (Instituto de la Patagonia, Universidad de Magallan) and Manuel San Roman (Instituto de la Patagonia, Universidad de Magallan)

[207]

Offing 2 Locus 2 Archaeological Site (Dawson Island, Patagonia, Chile), Marine Hunter-Gatherers and Interaction during the Late Holocene

The results of Offing 2 Locus 2 archaeological excavation are presented and used to discuss broader implications for Patagonia hunter-gatherer contexts of the Late Holocene. The site is located near Dawson Island, within a strategic geographical position between Fuegian-Patagonian archipelagos, South American. Radiocarbon dating states occupation around 800 years B.P. Evidence is characteristic of shellmidden deposits and chronological evidence indicates a short occupational sequence. Lithic technology includes use and transport of green obsidian with predominant use of local rocks, and a wide typology of instruments as end-scrapers, side-scrapers and knives, common along the macro-region. As for projectile points they are predominantly stemmed but varied in typology and small size points are identified with bow-arrow weapons similar to those described for ethnographic collections. Bone instruments consider wedges, retouchers and awls, among others, but the key characteristic instruments are harpoon points of one barb and simple-tenon base that are detachable, also described in historic-ethnographic times. Other fauna elements include guanaco bone remains (Lama guanicoe) and scallop shells (Chlamys sp.) both of exotic origin and decorated bird bone pendants. Subsistence strategies are dominated by pinniped exploitation, sea birds and fishing. Results are discussed in relation to cultural traits and interaction evidence.

Moretti, John (Museum of Texas Tech University)

[16]

Preliminary Analysis of Extinct Box Turtle Remains from the Late Pleistocene of the Southern High Plains

A diverse and abundant latest Pleistocene vertebrate fauna is currently being investigated at Macy Locality 100 on the southeastern edge of the Southern High Plains, Texas. Remains of an extinct box turtle (*Terrapene carolina putnami*) are common among the recovered material from the site's alluvial deposits. Believed to have been a mesic form, the extirpation of the eastern species from the region and the extinction of the *T. c. putnami* are ostensibly linked to ecological changes of the terminal Pleistocene. Morphological characters are utilized to demonstrate identification of Macy Locality 100 material to this extinct taxon and population dynamics are examined. The spatial distribution of *T. c. putnami* material is plotted and considered against the range of radiocarbon dates from the locality, as well as from the known temporal range of the taxon itself. This study is undertaken in a context of exploring regional abiotic change and biotic response during the Pleistocene-Holocene transition. Such explorations are a major component of the career of Eileen Johnson. Current investigations operate within the Lubbock Lake Landmark Regional Research Program, a venue for discovery and research opportunities.

Morgan, Molly [55] see Lohse, Jon

Morgan, Christopher (University of Nevada, Reno), Loukas Barton (University of Pittsburgh) and Bayarsaikhan Jamsranjav (National Museum of Mongolia)

[180]

Paleoenvironment and the Hunter-Herder Transition in Northwestern Mongolia

New paleoenvironmental proxy data indicate a series of changes in hydrology and environment from the terminal Pleistocene through middle Holocene inUvs Province, Mongolia. Recent archaeological surveys, excavations and GIS-based analyses suggest these changes may correlate with alterations in technology and land use that are arguably consistent with the temporal span thought to represent the adoption and/or in situ development of pastoralist economies across the region. These correlations are explored with a set of hypothetical models designed to explain the fundamental behavioral changes taking place within this span of time that take into account the interplay between environment, technology, settlement, and social structure.

Morgan, Michele (Peabody Museum, Harvard University), Jane Rousseau (Peabody Museum, Harvard University) and Christina Hodge (Stanford University Archaeology Collections)

[284] *Early 19th Century Anatomical Instruction at Harvard Medical School: A Bioarchaeological Study of Human Remains from Holden Chapel, Harvard University*

This paper reports recent study of anatomized human remains and artifacts from a trash feature beneath Holden Chapel in Cambridge, Massachusetts, once home to Harvard University's medical school. The building housed medical instruction from 1801 until 1825 and was used for periodic anatomical lectures until the 1860s. During a 1999 renovation, archaeologists recovered more than 2700 objects, including scientific equipment, domestic artifacts, and faunal remains, from a defunct dry well in Holden's basement. Mingled with this debris were over 900 fragments of human remains representing at least four juveniles and twelve adults. Analysis of these remains in conjunction with archived lecture notes of the first medical school faculty, institutional records, and instructional works on anatomy permits us to connect the condition of material remains and instructional purpose. Observed cuts on sectioned bones are consistent with amputation techniques and methods of anatomical preparation. X-ray fluorescence spectroscopy documents heavy metals used for preservation. Evidence of material interactions between scholar and cadaver also reveal the social impacts of anatomization. The Holden Chapel collection offers unique insights into the practice of early modern anatomical instruction, as well as ways in which medical authority was bound with notions of ethics and personhood.

Morgan-Smith, Maggie (University of North Carolina at Chapel Hill)

[127] *Fringe Benefits?: Historical Household Investigations at Rancho Kiuic, Yucatan, Mexico*

This paper presents preliminary findings from recent research at Rancho Kiuic, an eighteenth–twentieth century landed estate in the Puuc region of Yucatán, México. Occupied by generations of Maya-speaking landowners and laborers during the Colonial and Republican eras, the Rancho represents a site type with that has seen little archaeological or ethnohistoric investigation. Drawing on household-level excavation data, oral histories among the Rancho's descendant community, and archival research, landowner-laborer relationships among Maya-speakers will be explored. Furthermore, the Rancho's temporal and physical position, on the cusp of historical political shifts and at the edge of centralized political authority, will be considered as it relates to the critical issues of socioeconomic status and tenancy patterns among laborers and landowners at the site.

[127] *Chair*

Moriarty, Ellen [26] see Moriarty, Matthew

Moriarty, Matthew (Castleton University), Antonia Foias (Williams College) and Ellen Moriarty (Community College of Vermont)

[26] *Articulating Economies in the Land of the Ik' Lords: Evidence for Marketplaces and Multiple Modes of Exchange in the Late Classic Motul de San José Polity*

More than a decade of research in the Motul de San José area has produced a rich corpus of household middens and domestic artifact assemblages reflecting a wide range of social statuses and occupations at a diverse set of local centers. This body of data permits a detailed bottom-up consideration of patterns of production, consumption, and distribution for a wide range of goods within and between member communities in the Late Classic Motul polity. This paper examines the evidence for marketplace exchange in the Motul area through the lens of household-level obsidian and ceramic consumption data. These data strongly support the identification of markets within the Motul polity, and, further, suggest likely locations; however, these data also highlight the complexity of local economics and provide evidence for multiple modes of exchange.

Moriarty, Ellen and Matthew Moriarty (Castleton University)

[291] *Household Economies in the Petén Lakes Region: Late Classic Ceramic Assemblages from Trinidad de Nosotros and Xilil*

In this paper, we present a detailed view of ancient Maya domestic economy from the perspective of household midden ceramic assemblages at two sites along the north shore of Lake Petén Itzá: Trinidad de Nosotros and Xilil. A highly successful method of midden prospecting was employed over the course of three field seasons, resulting in the excavation of more than 20 middens in 15 Late Classic residential groups across the two sites. Analyses of ceramics from these middens, including type-variety, functional, modal, and petrographic, shed light on behavioral patterns and activities carried out in and around households of all socioeconomic levels. Through comparisons with middens clearly created through public ritual activities, this paper provides a working definition of a typical Late Classic household midden in the central Petén Lakes region.

Morris, John (Institute of Archaeology, Belize) and Jaime Awe (Northern Arizona University)

[58] *Exhibiting Maya Archaeology in the Developed World: A Developing Country Perspective*

Mounting exhibitions that highlight the achievements of Mesoamerican civilizations can be a daunting task for curators of even the most affluent museums in America, Europe or Asia. In the case of smaller museums with ever decreasing budgets, the challenges posed by these projects are greater, and sometimes even cost-prohibitive. But what about the situation faced by the lending institutions in the developing world? Are there challenges and benefits that result from their collaboration with museums interested in exhibiting their cultural heritage? In an effort to address this very question, this paper examines the ethical, political, social, and financial challenges and benefits that participation in international exhibitions provides to the Belize Institute of Archaeology.

Morrison, Kathleen (University of Chicago)

[138] *Other Archaeologies of the Present: Enduring Legacies of Past Land Use*

Some scholars take the label 'archaeology of the present' to refer to the study of very recent archaeological records and material remains, but here I use it to refer to the ways in which even ancient human action has ongoing significance for the present and the future. One of the many arenas of the contemporary significance of the 'archaeological' past is the legacy of past land use, including that of irrigated agriculture, on regional and global vegetation, landforms, and even climate. I discuss a new working group, Landcover 6k, designed to study how land use and land cover (vegetation) changes throughout the Holocene have been linked and how these changes have had an impact on regional and global climate.

Morrison, Alex [296] see Allen, Melinda

Morrow, Juliet (Arkansas Archeological Survey)

[21] *Clovis Origins: A Global Perspective*

I review the archaeological record of northern Eurasia and North America from 15,000 to 12,000 cal B.P. to better define the Clovis cultural complex and identify its most likely area and time of origin. Evidence including a clinal pattern of point style changes indicates migration southward and eastward through North America south of the ice sheets. Diagnostic attributes permit discrimination of early, middle and late Paleoindian assemblages. These data support a relatively simple and parsimonious model of the peopling of the New World.

[21] *Discussant*

[21] *Chair*

Morsink, Joost [220] see Haviser, Jay

Morsink, Joost, Jay Haviser (SIMARC, Leiden University), Ruud Stelten (Leiden University) and Dr. Corinne L. Hofman (Leiden University)

[222] *Coastal Resource Exploitation during the Late Ceramic Age on Bonaire, Dutch Caribbean*

Leiden University recently initiated a long-term field project on Bonaire, Dutch Caribbean, which focuses on the human exploitation of resources in dynamic coastal environments. The location of the Den Bon site - behind a large inland bay bordered by mangroves and on the edge of a tidal flat - suggests an explicit interest in resources that derive from such environments. Previous research has indicated that island-specific resources were fundamental in the creation of larger regional networks in the Lesser Antilles and wetland resources likely played an equivalent role in producing such networks through exchange. The practices involved in the exploitation, manufacture and exchange of local resources are entwined, producing a web of relations between materials and people. As such, unraveling the complexities of resource exploitation at Den Bon requires a multi-disciplinary approach in which resources, the site context, and its larger regional embedding are analyzed in tandem. This research provides a unique opportunity to explore indigenous realities and ontologies of daily life by focusing on the exploitation of local wetland resources and their regional significance.

Moseley, Michael

[219] *Discussant*

Moser, Duane [63] see Hamilton-Brehm, Scott

Moses, Victoria (University of Arizona) and Ugo Fusco (Sapienza University of Roma)

[80] *From Iron Age Settlement to Etruscan Urban Sanctuary: Zooarchaeological Analysis at Veii (Campetti-Southwest Excavation)*

Veii (Veio) was one of the most significant urban centers in central Italy during the Etruscan Period. The Campetti-Southwest excavations at Veii have uncovered more evidence from this site pertaining to its Iron Age settlement (Period I), the Etruscan period urban sanctuary (Period II), and later occupations. The focus of this research is Period I (late ninth to mid-seventh cent. B.C.E.) and II (mid-seventh to fourth cent. B.C.E.). The faunal remains from these time periods add to our understanding of the changes that accompanied the shift from medium-sized settlement to urban center. In Period I, the faunal remains are primarily consumption waste, serving as evidence for the role of animals in subsistence during the earliest occupation of the site. Later deposits are associated with votive offerings at the urban sanctuary, reflecting animal sacrifice. The contexts from Period I differ from the votive deposits of Period II in multiple aspects, including proportions of taxa present, age of animals, skeletal elements, and modifications such as burning. The faunal assemblage reflects variation in utilization of animals both diachronically and based on activity.

Moses, Sharon (Northern Arizona University)

[187] *Life among the Tombstones: Forensics Crosses Paths with Hoodoo*

African magic rituals among the graves of the recently dead in the south and elsewhere may not be as rare as one might think. This paper is an exploration of a case wherein the author was called in as a forensic archaeologist and consultant to law enforcement investigating a case of cemetery desecrations with supernatural overtones. Further, during the course of this investigation, possible connections between the author's historical archaeological research excavation of a slave street on a former plantation and its descendants came to light. Faced with the dilemma of assisting law enforcement yet maintaining confidentiality of descendant populations, this is also an examination of ethics when forensics, religious culture, and research cross paths.

Moss, Patrick [295] see Haberle, Simon

Most, Rachel [287] see Lerner, Shereen

Mosteller, Kelli [266] see Sievert, April

Motta, Laura (University of Michigan)

[103] *Cultural Choices and Exchange Networks: Cereals in Iron Age and Archaic Italy.*

Staple foods offer an ideal opportunity to investigate cultural identity and socio-economic interactions. In Iron Age and Archaic Central Italy several kinds of cereal staples were grown, consumed and possibly exchanged. Different patterns shown by recent archaeobotanical research suggest interesting implications for the understanding of the cultural and political landscape of central Italy in a period of rapid transformations. A new method has been

developed to detect directly the movement of cereal staples across the region and the very first preliminary results of Sr isotopic analysis on charred seeds from Gabii will be presented.

Motz, Christopher F. [27] see Wright, Joshua

Mountjoy, Joseph (Universidad de Guadalajara, México), Fabio Germán Cupul Magaña (Universidad de Guadalajara, Mexico), Rafael García de Quevedo Machain (Universidad de Guadalajara, Mexico) and Martha Lorenza López Mestas Camberos (Centro I.N.A.H. Jalisco, Mexico)

[101] *The Early Postclassic Aztatlán Colonization of the Coast of Jalisco, Mexico*

Recent investigations at the site of Arroyo Piedras Azules on the northwestern coast of Jalisco have revealed much about the nature and the date of Early Postclassic Aztatlán colonization of the Pacific coast of Jalisco. Excavations at this 3–4 hectare habitation site by a local enthusiast and follow-up investigations that included stratigraphic excavations by the primary author have indicated a direct colonization of this site by people from coastal Nayarit who arrived during the Cerritos phase (circa 1000 A.D.) possessing elaborate polychrome pottery, spindle whorls, figurines, metal and shell fishhooks, prismatic obsidian blades and jewelry of metal, bone, stone and shell. Analysis of shell and bone refuse shows a broad-spectrum diet of coastal resources. The reason for this colonization it thought to have been principally to obtain local spondylus shell for jewelry manufacture.

Moura, Guy

[203] *Discussant*

Moy, Rachel [177] see Wendrich, Willeke

Moyer, Teresa (National Park Service)

[229] *NPS Archeology and Outreach: A Broad View of 100 Years*

Over the past 100 years, a range of outreach and education activities have helped the National Park Service to meet its mission while engaging the public's interest in the mystery, fun, and dirt of archeology. From field trips to public digs to web sites, the NPS has aimed to remain engaged and relevant in multigenerational learning. This paper will outline the changing approaches to outreach and education by archeologists in the NPS.

[229] *Chair*

Moyes, Holley (University of California, Merced), Laura Kosakowsky (University of Arizona, Tucson), Jaime Awe (University of Northern Arizona, Flagstaff) and Erin Ray (University of California, Merced)

[294] *The Chronology of Ancient Maya Cave Use in Belize*

The prevalence of Late Classic cultural material in ancient Maya ritual cave sites has led both researchers and lay people to characterize cave use as a Late Classic phenomenon; yet, data collected by the Belize Cave Research Project under the direction of Holley Moyes and Jaime Awe demonstrates that many if not most caves were initially used during earlier temporal periods and many sites demonstrate continued use beginning in the Preclassic period. From 2011 to 2015, the regional project has investigated over 50 caves in northern, western, and central Belize. Of these, 25 sites were studied intensively which included mapping, recording, conducting ceramic analyses, excavating, and radiocarbon dating. In this paper we present the results of our analysis of the spatial and temporal aspects of ancient Maya cave use in Belize.

Mrasek, Kayleigh [94] see Lamkin, Sarah

Mueller, Natalie

[98] *Seeds as Artifacts: Investigating the Spread of Agroecological Knowledge in Eastern North America, c. 1000 B.C.E.–1300C.E.*

For crops to spread successfully, transmission of knowledge about how, when, and where to grow them is just as important as the seed itself. Seed morphology can be used as a proxy for this knowledge in two ways: 1) Domesticated seeds have been shaped by many generations of human cultivation, and agricultural practices can be reconstructed from their morphology; and 2) plasticity causes morphological variation that is a function of the growth environment created by communities for their crops. I integrate data from field collections, greenhouse experiments, and analysis of archaeobotanical assemblages of one seed crop, erect knotweed (*Polygonum erectum* L.) to investigate agricultural practices through space and time in eastern North America. I then turn to ethnography for insights into the institutions that may have facilitated the spread of crops and agricultural knowledge from one community to another.

Mullen, Kyle (University of Kentucky)

[216] *Classic Period Dune Settlement in the Eastern Lower Papaloapan Basin (ELPB), Southern Veracruz, Mexico*

The Tres Zapotes polity flourished in the Eastern Lower Papaloapan Basin (ELPB) between 400 B.C. and 300 A.D. As Tres Zapotes' economic and political power waned in the Early Classic, the ELPB became a political frontier (Stark 1997). Sites in the contested political landscape of the ELPB and Tuxtla Mountains strengthened their ties to both Classic Veracruz and Central Mexico (Stoner 2011; Loughlin 2012; Santley 2007). This paper broadly explores how the political and economic landscape of the ELPB evolved in relation to the resilience of the Tres Zapotes polity (ca. 1250 B.C.–A.D. 900). More specifically, I examine 17 square kilometers of coastal paleodune occupation in the northern ELPB. Through systematic pedestrian survey, surface artifacts were collected and analyzed over the course of two seasons. This paper presents the results of two seasons of research and explores the processes that account for the primarily Classic Period dune occupation. I will shed light on the demographic, economic, and political changes occurring in the region at this time.

Mullen, Kyle [264] see Pool, Christopher

Muller, Miriam (Joukowsky Institute, Brown University)

[75] *Discussant*

Müller, Lais [255] see Eigenherr, Gustav

Mullins, Patrick [205] see Smith, Ryan

Mullins, Patrick (University of Pittsburgh)

[228] *Hilltop Visibility Networks and Empire in the Moche Valley*

Prehistorically used in contexts ranging from mountain deity veneration to imperial conquest and warfare, hilltops serve as excellent platforms for staying connected to and informed of the surrounding social, political, and ritual landscape. This being said, how can the characteristics of visibility networks between hilltop sites help inform archaeologists of the ancient socio-political and ritual settings on which they were situated? Featuring dozens of hilltop sites that temporally correlate with the expansion of the nearby Chimú Empire, the Late Intermediate Period (A.D. 900–1470) settlement patterns of the Moche Valley in Peru provide a relevant case-study for this analysis. This paper applies social network theory to inter-visibility networks in the Moche Valley in order to understand how different stages of the Chimú Empire's involvement in that region may have influenced the organization and placement of such sites. In particular, the visual centrality of certain sites can be seen as being related to their economic, defensive, and ritual importance. Only through interweaving local traditions of apu veneration, imperial interest in canal construction, and the defensive necessities of living on a volatile imperial frontier can the visual interconnectedness of these hilltop sites be understood.

Mulrooney, Mara (Bishop Museum), Mark D. McCoy (Southern Methodist University) and Thegn N. Ladefoged (University of Auckland)

[296] *Returning to the Gardens of Lono: New Investigations in the Kona Field System, Hawaii Island*

Hawai'i Island's Kona Field System is the largest dryland field system in the Hawaiian Islands. The chronology for the development of this system has been addressed through several major studies, including the landmark volume 'Gardens of Lono' which described intensive survey and excavations on the grounds of the Amy Greenwell Ethnobotanical Garden in Kealahou. Since its publication, radiocarbon dates from this and most other excavations in Kona have been rejected due to a lack of control for short-lived taxa, and new excavations of fields in Kealahou suggest a much more recent chronology for the development of the fields. In 2015, we returned to the Amy Greenwell Ethnobotanical Garden and conducted new excavations of a kuaiwi (field wall) aimed at recovering appropriate material for radiocarbon dating and new paleoethnobotanical studies. In this paper, we outline the results of excavation and discuss their implications for the development of agriculture in Hawai'i.

Mulvihill, Timothy S. [225] see Mitchem, Jeffrey

Muñiz, David (El Colegio de Michoacán) and Kimberly Sumano (El Colegio de Michoacán)

[101] *The Construction of Prehispanic Landscapes in the Santiago Bayacora Basin, Durango*

Northern Mexico has traditionally been underrepresented in received archaeological scholarship on Mesoamerica, and in this sense the Guadiana branch of the Chalchihuites Culture in Durango is no exception. Nonetheless, in recent years archaeological research in the region has produced a body of new data that permits a deeper understanding of the ancient inhabitants of Durango. This paper explores archaeological evidence from the Santiago Bayacora basin, a riverine watershed whose lower portion encompasses Durango's Guadiana Valley. A hypothetical regional settlement pattern for the period of Chalchihuites occupation (A.D. 550–1150) is suggested through a consideration of architectural types and their distribution, site visibility and situation within the landscape, and ceramic analysis—data that also point to the sociopolitical organization of the groups inhabiting this landscape. Finally, utilizing the frameworks of landscape archaeology, the author explores the dynamics of the processes of landscape appropriation in which regional groups were likely involved. This paper thus contributes to contemporary debate by highlighting a series of key questions and suggestions for continuing investigation that are critical to augmenting our burgeoning understanding of the archaeological record of northern Mexico.

Munkittrick, Jessica (Memorial University of Newfoundland), Alison Harris (Memorial University of Newfoundland), Kelly-Anne Pike (Memorial University of Newfoundland) and Vaughan Grimes (Memorial University of Newfoundland, Max Planck In)

[190] *"They are One with the Tides of the Sea": Diets of Settlers and Sailors in Newfoundland during the 17th to 19th Centuries*

From the mid seventeenth to early nineteenth centuries the lucrative cod fishery drew sailors and settlers from the British Isles and continental Europe to the shores of Newfoundland. Poor agricultural prospects and a dependence on imports challenged permanent settlement; as a result, the life- and foodways of these early 'Newfoundlanders' differed from those that developed at other North American colonial settlements. Through palaeodietary analysis, we investigate the different subsistence-based adaptive strategies devised by these settlers to both cope with Newfoundland's harsh environment and to maintain important sociocultural ties with their homelands. We examine the $\delta^{13}\text{C}$ and $\delta^{15}\text{N}$ values of bone and dentine collagen of individuals (n=46) recovered from seven historic sites and cemeteries in Newfoundland to explore how limited terrestrial resources and imported food supplies affected the diets of settlers. We further compare these results to stable isotope values from British Royal Navy sailors buried on Newfoundland whose diets were not subject to the same restrictions as those settled in Newfoundland. The findings of this study emphasize the ability of the early settlers to overcome the limits of the terrestrial environment and the critical role of the sea for sustaining life and community.

Muñoz, Victoria [131] see Roberts, Jerod

Munro, Kimberly (Louisiana State University)

[31] *Localized Formative Traditions in the Upper Nepeña River Valley, Ancash, Peru: The 2015 Excavations at the Cosma Archaeological Complex*

This paper will explore the development and use of a localized ceremonial complex at the base of the Cordillera Negra Mountains, in coastal Ancash. Located at the headwaters of the Nepeña River valley at an elevation of 2,650 masl, the Cosma Archaeological Complex shows a repeated occupation from the Pre-Ceramic through Late Horizon. This paper will cover the chronology and ritual use of the two main ceremonial mounds: Karecoto, and Achshipucoto, which date from the Pre-Ceramic through Final Formative. Not surprisingly, based on its location, Cosma shares elements of coastal and highland influence through its architectural components, ceramics, and other trade items. Excavations during the 2014 and 2015 season revealed a

tradition of circular walls associated with the burning of animal bones, as well as a final capping of the Karecoto mound with infant interments during the Final Formative. Focusing on chronology, construction, and the ritual use of the mounds, this paper will cover the preliminary findings from the 2014 and 2015 field seasons.

Munro, Kimberly [276] see Witt, Rachel

Munson, Marit (Trent University)

[13] *Life Histories of Ochre and Related Pigments in the Ancestral Pueblo Southwest*

What defines an ochre: its chemical composition, its color, or both? The Ancestral Pueblo people of the U.S. southwest used a range of red and yellow pigments, some of which fit strict scientific definitions of ochre and some that do not. Ancestral Pueblo people also created a variety of paints by mixing these pigments with clays and other materials. In this paper, I consider the use of mineral pigments and paints through time and space, drawing on material from Chaco Canyon, Mesa Verde, ancestral Hopi and Zuni sites, and a variety of other locations. I argue that that ochres recovered from archaeological sites are most productively treated as artifacts that document stages of use, from the acquisition of raw materials to the production and application of paints. As such, these materials preserve traces of the life histories of pigments, from modification and use wear to evidence of storage and curation over time. These examples remind us that documenting the color and composition of ochres is not always sufficient; rather, the source, history, and materiality of these pigments was often crucial to their significance, efficacy, and power.

Munson, Jessica (Lycoming College), Jonathan Scholnick (University of California Davis), Matthew Looper (California State University Chico), Yuriy Polyukhovych (California State University Chico) and Martha Macri (University of California Davis)

[272] *Diversity and Divergence of Classic Maya Ritual Traditions: A Lexical Perspective on Within-Group Cultural Variation*

To study the Classic Maya is to at once recognize the shared material representations and practices that give coherence to this cultural category as a unit of analysis, as well as to critically examine the diversity and idiosyncrasy of specific cultural traits. Maya hieroglyphic writing, in particular the tradition of inscribing texts and images on carved stone monuments, offers evidence for widespread and mutually intelligible cultural practices that were neither unchanging nor uniform in their semantic content. As conduits of linguistic and cultural information, Maya hieroglyphic monuments offer detailed records of Classic Maya dynastic history that included the names, dates, and specific rituals performed by elite individuals. In this paper we analyze the distribution and diversity of these inscriptions to examine ritual variation and the divergence of dynastic traditions in Classic Maya society. Diversity indices and methods adapted from population genetics and ecology are applied to quantify the degree of ritual differentiation and evaluate how these measures vary over time and are partitioned within and between elite populations. Results of this research refine our understanding about the variation of Classic Maya ritual traditions and make substantive contributions to examining the population structure of cultural diversity within past complex societies.

Muntoni, Italo [146] see Freund, Kyle

Muro, Luis (Stanford University) and Elsa Tomasto Cagigao (Pontificia Universidad Católica del Perú)

[99] *Ontologías Corpóreas: Transfiguración, ancestralización y "muerte" en el mundo Moche*

En las últimas cuatro décadas decenas de tumbas de élite Moche (200–900 A.D.) han sido descubiertas a lo largo de la costa norte del Perú, develando importante información sobre la vida física, la identidad y el status de los antiguos Moche. Sin embargo, y paradójicamente, la gran cantidad de datos recuperados contrasta con los pocos intentos de teorizar cómo el cuerpo pudo haber sido construido y conceptualizado por esta sociedad. Integrando la fenomenología de Merleau-Ponty y el perspectivismo amerindio de Viveiros de Castro, esta ponencia expande el debate sobre el estudio de la fisicalidad y materialidad del cuerpo en el pasado. Utilizando como caso de estudio a San José de Moro, un importante cementerio de élite Moche en el valle de Jequetepeque, exploramos cómo la transfiguración corpórea: de una entidad humana a divina, y de divina a ancestral, tuvo un rol fundamental en los espectáculos rituales en el sitio y, últimamente, en la negociación y legitimación de poder político en el valle. Esta investigación interconecta datos arqueológicos, bio-arqueológicos y etnográficos para descifrar cómo el cuerpo Moche fue inscrito en el mundo material, social y el landscape; contribuyendo así al estudio de los diversos "being-in-the-world" presentes en el mundo andino pre-hispánico.

Muro, Luis [206] see Perea, Ema

Murphy, Kimmarie (Dept. Anthropology, Kenyon College) and Guðný Zöega (Archaeology Dept, Skagafjörður Heritage Museum)

[24] *Life on the Northern Frontier, Bioarchaeological Reconstructions of 11th century Households in the Skagafjörður Region, North Iceland*

Iceland was settled in the ninth century by people of Norse and Celtic stock. Located on the margins of the Viking world, the Skagafjörður region was, by the eleventh century, home to a large number of independent households forming core social units in a country without a king or central government. Although they maintained close ties with their old home world, ship arrivals were erratic and individual households were largely dependent on their own produce for survival. Early settlers lived in a perpetual state of flux due to their sub-arctic environment. Seasonal weather fluctuations affected harvests and livestock viability. Volcanic eruptions and sea-ice posed additional hardships. Their pagan religion was being replaced with Christianity, leading to potential changes in social stratification and identity. Evidence for their biocultural responses to this stressful environment may be gleaned from early Christian household cemeteries. This paper will discuss the bioarchaeology of the Viking-age/medieval households interred in the earliest Christian cemeteries in the Skagafjörður region. Unlike earlier pagan burial fields, the first Christian cemeteries were "all-inclusive," including both sexes and all age groups. What do these cemeteries tell us about the social realities, health and survival of frontier populations at the edge of the arctic?

Murphy, Nell

[30] *Chair*

Murphy, Nell [30] see Watson, Adam

Murphy, Shannon (Eckerd College)

[142] *Discovery of Plantation Row Housing on Cat Island, Bahamas*

Multitunit housing for enslaved populations was introduced to estates in the West Indies at the dawn of the nineteenth century during the broader British movement to improve habitations of both free and unfree rural laborers. Planters attempted to counter abolitionist criticism by installing housing that incorporated new layouts and more durable materials. Material culture studies of plantations in the Bahamian archipelago, however, have long recognized an absence of row house architecture. This has led to speculation that some recommendations of British reformers were not adopted in the Bahamian colony due to local conditions that were different from those of the sugar colonies. Recent surveys at Cove Creek and Golden Grove, two plantation sites on Cat Island, have at last revealed structures with floor plans and dimensions that are consistent with contemporaneous row house architecture in other parts of the British Caribbean. The evidence for row housing suggests that the Bahama Islands were not outside the influence of the agrarian reform movement. The findings force a reconsideration of previous claims about the role of agency and demography among the enslaved.

Murphy, Charlene (University College London, Institute of Archaeology)**[147]** *Finding Millet in the Roman World*

Examining the evidence for millet in the Roman empire, during the period, circa 753 B.C.–610 A.D., presents a number of challenges: a handful of scant mentions in the ancient surviving agrarian texts, several frescoes, only a few fortuitous preserved archaeological finds and limited archaeobotanical and isotopic evidence. Ancient agrarian texts note millet's ecological preferences and multiple uses but disparage its lowly status. Recent archaeobotanical and isotopic evidence has shown that millet was being used throughout the Roman period. The compiled data to date suggests that millet consumption was a more complex socio-economic issue than the ancient sources alone would lead one to believe. Combining multiple lines of evidence, including the ancient sources, isotopic, archaeological and archaeobotanical evidence the status and role of millet in the Roman world is examined and placed within its economic, cultural and social background across time and space in the Roman world.

Murphy, Joanne (University of North Carolina Greensboro)**[257]** *The Value of All that Glitters: Beads in the Tombs around Pylos, Greece*

This paper aims to explore the value of faience and glass in Bronze Age Pylos with a view to reconstructing the wealth and status of the people with whom they were buried.

These beads must have been imported to Pylos as finished objects since none of the raw materials are found locally and we have no evidence for their manufacture or production at Pylos. Indeed our analysis of a sample of the vitreous beads shows that some of these beads, or at least their substance, originated in Egypt and Mesopotamia. As imported substances these beads connect to recent discussions on the Mycenaean political economy that stress control of trade and access to exotic and highly crafted objects as major power strategies in legitimizing elevated social positions. In contemporary Egypt and Mesopotamia, glass and faience had very different values with glass having a higher value and more limited distribution than faience. By examining the distribution of the beads in the tombs and the value of other objects found with them, we will be able to recreate a more nuanced understanding of the relationship between the value to these objects and the wealth and status of the people buried around Pylos.

Murphy IV, Timothy J. [131] see Lindsay, Audrey

Murray, Matthew and Bettina Arnold (University of Wisconsin, Milwaukee)**[60]** *A "Landscape of Ancestors"—Looking Back and Thinking Forward*

In 2002, we completed the excavation of two early Iron Age burial monuments in southwestern Germany as part of the "Landscape of Ancestors" project. After more than a decade of restoration and laboratory analysis, the project is now being prepared for publication. Our research is focused on a complex mortuary landscape from 720 to 400 B.C. and our perspectives on that landscape have been substantially influenced by ideas of landscape, time, and society that we absorbed as graduate students from Carole Crumley and William Marquardt's *Regional Dynamics: Burgundian Landscapes in Historical Perspective* (1987), which presented an innovative multiscalar approach to human history in a particular place, as well as from other contemporary works such as the edited volume *Social Relations and Spatial Structures* (1985) by geographers Derek Gregory and John Urry, and the now classic *Postmodern Geographies* (1989) by Edward Soja. These pioneering works fueled a career-long interest in the intersections of historical ecology, critical social geography, and experiential human geography. In this paper, we reflect on these connections and on how they continue to open pathways of understanding today.

Murray, Seth (North Carolina State University)**[60]** *Expanding Historical Ecology from Interdisciplinary to Transdisciplinary Objectives*

The approaches and perspectives of Historical Ecology are solidly grounded in interdisciplinary objectives. Wide-ranging projects, such as the one Carole Crumley initiated and has sustained in France, demonstrate the utility of integrating interdisciplinary objectives into research that seeks to understand long-term changes in a landscape. As the original set of archaeological objectives in Crumley's project changed over time, Historical Ecology emerged as a robust conceptual framework that facilitated a multitude of local and international collaborations, and enabled the pursuit of new interdisciplinary objectives. This paper presents results from a historical ecology research project in southwestern France that sought to parallel or reproduce some of Crumley's interdisciplinary investigations in Burgundy, and then discusses an example of how and why recent lines of inquiry in historical ecology are shifting from interdisciplinary to transdisciplinary objectives.

Murray, Emily Jane and Keith Ashley (University of North Florida)**[164]** *New Approach to the Shields Mound: Recent Testing of the North Side Ramp*

Shields Mound is one of two large burial mounds that compose the Mill Cove Complex, an early Mississippian period site located near the mouth of the St. Johns River in northeast Florida. First excavated by C. B. Moore in the 1890s, the sand mound held hundreds of burials as well as exotic goods such as copper, galena, mica, and two ground stone spatulate celts. More recently, the University of North Florida has investigated nearby components of the complex, including several habitation middens and a feasting or ritual area situated about 50 meters from the mound. This paper explores the results of testing of a ramp-like feature that approaches the Shields Mound from the north—a section of the mound that Moore did not excavate.

Murray, John [191] see Yu, Pei-Lin

Murray, Tim

[258] *Discussant*

Murrell, Monica [64] see Heilen, Michael

Murrieta, Rui [125] see Cascon, Leandro

Murtha, Timothy (Penn State), Ann Cyphers (Universidad Nacional Autónoma de México) and Gerardo Jiménez (Universidad Nacional Autónoma de México)

[44] *The San Lorenzo Geospatial Project: Mapping the Olmec City and Landscape*

For the past decade, we have applied a series of nested geospatial techniques to better understand the development and evolution of the Olmec city of San Lorenzo and the surrounding regional landscape. Built on a foundation of more than two decades of traditional archaeological excavation, settlement survey and artifact analysis, the geospatial project expands the coverage and confirms much of what is known about San Lorenzo's evolution and settlement ecology. The project also provides opportunities to re-examine the spatial and temporal patterns of architecture and artifacts, as it relates to San Lorenzo's cultural history. In this paper we first review the results of the digital sub-surface survey, a project wherein the entire site was referenced, gridded and cored for soil. We then describe how remote sensing, including LiDAR and low aerial high resolution imagery have been applied to broaden interpretations of San Lorenzo and its regional landscape. While these new technologies provide an enhanced picture of San Lorenzo's past, we offer that these data are far more useful and informative when coupled to the decades of traditional archaeological research.

[44] *Chair*

Muzzall, Evan (Human Evolution Research Center, UC Berkeley) and Alfredo Coppa (Dip. Biol Ambient., La Sapienza Università di Roma)

[24] *The Borders of Space and Time: Biological Continuity at Campovalano*

Territorial and cultural boundaries remain some of the most elusive and compelling areas of anthropological study. We examine biological continuity at Campovalano (Teramo, Abruzzo, Italy) to highlight ways that biology can be used to elucidate interpretations of frontiers and borderlands. We test the hypothesis that geographic location strongly influenced biological continuity in Italian history.

Eighteen cranial (n=278) and five maxillary dental (n=377) metric traits, and dental morphological (n=492) data from four groups were used in this study: Campovalano Iron Age (750–200 B.C.), Medieval (eleventh C. A.D.), and Recent (modern era), and Alfedena Iron Age (L'Aquila, Abruzzo, Italy; 600–400 B.C.).

Results of metric analyses indicate similarity between Campovalano Iron Age and Medieval samples—only interlandmark distances between bregma, lambda, and left frontotemporale differ significantly between these groups. Alfedena shows numerous differences with both Campovalano Iron Age and Medieval series, and principal component analyses of geometric group means reflect these distinctions. Neighbor joining methods of the dental morphological data suggest that Alfedena is the outgroup compared to the Campovalano Iron Age, Medieval, and Recent series.

Although the political boundaries of these neighboring groups were often in flux, their biological borders were perhaps governed by different sets of rules.

Myers, Emlen, Hector Neff (California State University at Long Beach) and Mike Glasscock (University of Missouri)

[91] *Compositional Study of Pre-Hispanic Ceramics from Eastern Bolivia*

Ceramics from three archaeological areas in the dry lowlands of eastern Bolivia were analyzed by instrumental neutron activation analysis (INAA). The resulting compositional data were analyzed statistically to identify potential patterns of manufacture and distribution. Samples were selected from three archaeological areas investigated prior to construction of the Bolivia-Brazil Natural Gas Pipeline in 1997–1998: 1) Rio Grande; 2) Bañados del Izozog; and 3) an inter-riverine area in the Gran Chaco National Park some 180 km east of the Bañados del Izozog. Radio Carbon dates associated with the potter finds indicate dates between A.D. 900 and A.D. 1300, an unexpectedly early date for pottery use in this dry and presently inhospitable zone. Results of the data analysis are most consistent with a hypothesis that ceramic circulation along the study area was rare during the time periods represented at the sampled sites. In each of the three archaeological zones, all pottery samples fall into a single compositional group, and the most parsimonious interpretation is that each of the three groups contain ceramics that were produced using local raw materials.

Nadeau, Jaclyn (University at Albany)

[85] *Reevaluating the Archaic/Woodland Transition in the Northeast*

This paper is the result of an ongoing research project into the technological and social changes occurring in northeastern North America from the Late Archaic to the Late Woodland. This dynamic period in the region's prehistory is traditionally marked as the boundary between mobile hunter-gatherer-fishers and ceramic-producing horticulturalists. The overall effect of these changes on regional populations is still, however, unclear. I argue that to better understand this period we must couple technologically oriented research with a renewed interest in cultural contexts. Combining these paradigms offers much needed insight into changing economic and social patterns.

[85] *Chair*

Nagaoka, Lisa [65] see Brown, Andrew

Nagarajan, Sudhagar and Christian Davenport (Palm Beach County Government)

[140] *Terrestrial Laser Scanning: A Methodology for Documenting Existing and Extrapolating Past Setting on Archaeological Sites*

The Jupiter Inlet I (8PB34) site is one of the most investigated prehistoric sites in Palm Beach County, Florida. Like many of the ancient shell works sites across the state it was partially destroyed for road fill during the first half of the twentieth century. Only a sketch map of the site from 1883 depicts what the site looked like prior to destruction. Since then there have been attempts to reconstruct the mound form but these relied on verbal accounts and limited stick and scope survey methods. In 2007–08 LiDAR was flown over the coast and eventually made into a DEM. Both the raw LiDAR and DEM files were employed to determine if differences in elevations observed in the field corresponded to features depicted in the 1883 map. The results of this analysis

were encouraging but to improve the accuracy, the mound was 3D scanned using Terrestrial Laser Scanning (TLS) technique. This lecture will present the results of the scanning including a calculation of the volume of the remaining shell mound along with the volume estimate change between 1883 and 2015.

[140] *Chair*

Naji, Stephan [146] see Rendu, William

Nakagawa, Nagisa [102] see Seki, Yuji

Nan, Puheng (Institute for Cultural Heritage and History of Science and Technology, USTB), Wugan Luo (University of Chinese Academy of Sciences), Virginie Renson (University of Missouri), Michael D. Glascock (University of Missouri) and Wei Qian (Institute for Cultural Heritage and History of Sci)

[180] *Lead Isotope Study of the Jin State Bronze Artifacts from Wayaopo Site, Shanxi Province, Northwest China*

The Jin State was one of the most important countries in the Spring and Warring States period (771 B.C.~221 B.C.). Before the middle Spring period (~576 B.C.), it shared the bronze cultural tradition with the central dynasty (Zhou Royal family). After that, the bronze culture of Jin state was established and is characterized by different types of vessels, decorations and sometimes, manufacturing techniques. Wayaopo site is one of the typical noble family cemeteries of Jin state. In this work, 45 bronze samples from seven tombs were collected for lead isotopic study. The study attempts to provide a new perspective to examine the relationship between Jin state and the Zhou royal family, as well as other important states during that period. It also examines the source of the different vessel types from the same tomb and compares the source of ritual artifacts (such as ding vessels) with that of daily life artifacts (such as bu vessels). It finally discusses the hypothesis of a change in the bronze artifact source through the chronology of the Jin state.

Napoleon, Taylor (Indiana University of Pennsylvania), Alyssa Hyziak (Indiana University of Pennsylvania), Scott Rivas (Indiana University of Pennsylvania), Emily Falk (Indiana University of Pennsylvania) and Ben Ford (Indiana University of Pennsylvania)

[90] *Beyond Fort Walls: Geophysical and Archaeological Investigations of Fort Haldimand, Carleton Island, New York*

During the American Revolutionary War, Carleton Island was home to the British naval base Fort Haldimand. Located on the St. Lawrence River in upstate New York, the base served as an important connection between Québec and British interior forts. The Thousand Island Land Trust protects Fort Haldimand, but the area immediately outside the fort is privately owned. During June 2015, archaeologists from Indiana University of Pennsylvania implemented a variety of geophysical and archaeological techniques to determine if intact features existed outside of the fort. The area was surveyed with an electromagnetic profiler, a dual gradiometer system, and ground penetrating radar. Based off of the geophysical results, 13 excavation units were placed in areas showing anomalies. The 1 m by 1 m units yielded two features, as well as a variety of 18th century artifacts, with the majority of the artifacts being found in units closest to the fort. This poster will highlight how the geophysical techniques helped in planning our archaeological excavation, the artifacts recovered from the site, and their importance in interpreting activities.

Napolitano, Matthew (University of Oregon), Traci Ardren (University of Miami), Scott Fitzpatrick (University of Oregon), Victor Thompson (University of Georgia) and Michelle LeFebvre (Florida Museum of Natural History; Leiden University)

[133] *Subsistence Strategies and Small Island Adaptations: New Evidence from the Florida Keys*

Archaeological research on prehistoric settlements in the Florida Keys has been largely sporadic and diffuse. To help improve our understanding of when the Keys were settled and their relationship to Calusa and other groups regionally, we revisited the well-known site of 8MO17 on Upper Matecumbe Key in the central Florida Keys and conducted preliminary subsurface investigation. Preliminary results from the newly established Matecumbe Chiefdom Project have revealed dense, stratified midden deposits dominated by vertebrates, with smaller quantities of invertebrates. These data have allowed us to evaluate the similarities and differences to other groups in southern Florida. Our research provides initial insight into the historical trajectories of subsistence practices for groups that ultimately paid tribute to the Calusa in the sixteenth century. This work and our ongoing research seek to illuminate the Matecumbe or Keys Indians and their place in the social geography of southern Florida.

Napora, Katharine (University of Georgia), James Bonsall (Institute of Technology Sligo) and Stuart Rathbone (Achill Archaeological Field School)

[80] *Geoarchaeology of a Dunefield Shell Midden Site in County Sligo, Ireland*

This paper presents the preliminary results of a geoarchaeological investigation of an expansive shell midden site in a dunefield blowout area known as the Shelley Valley in Carrowdough, Co. Sligo, Ireland. Based on the results of the various geophysical and archaeological methodologies we employed at this site during the summer of 2015, we examine changes through time in the ways people utilized the seashore and its resources. Western Ireland is an ideal location in which to study temporally diverse human-marine interactions because of the long-standing reliance on coastal resources in the region. This research focuses on temporality of subsistence and usage practices at the site to examine long- and short-term processes of human-environmental relationships. We present zooarchaeological analyses of core samples and surface counts as well as the radiocarbon dates we obtained from burnt hearth material and animal bones from the site. We also present our geophysical survey results, which illuminate the ancient landscape buried under this dunefield and illustrate the use of such technologies for sand dune site zonation studies.

Nash, Carole (Geographic Science, James Madison University)

[2] *Topography and Territoriality in the Virginia Uplands*

The western slopes of the Virginia Blue Ridge contain limited evidence of prehistoric activity, in stark contrast to the eastern slopes where prolific sites model seasonal upland mobility patterns for the southern Middle Atlantic. Fewer than 80 prehistoric sites, the majority identified as small lithic scatters bereft of diagnostics, are documented for the 105 miles of the western slopes of Shenandoah National Park; five times that number are documented for the eastern slopes. Attributed by some researchers to differences in topography and edaphic factors, the lack of western sites is contrasted with a rich regional archaeological record that demonstrates the regular movement of tool stone in the form of quartzite and chert from the Shenandoah Valley in the west across the Blue Ridge and eastward into the Piedmont. This presentation examines the distribution of known western Blue Ridge sites, including quarry sites used throughout prehistory, and proposes a more structured use of this region by mobile foragers, beginning in the Late Archaic. Hypotheses concerning the control of quarries and the regions around them by groups with attenuated mobility patterns are presented.

[2] *Chair*

Nash, Donna [91] see Williams, Patrick Ryan

Nash, Donna (UNCG)

[219] *Colonization as Imperial Strategy: the Wari Settlement of Moquegua, Peru*

When Wari colonists arrived to Moquegua (ca. 600 C.E.) there were several groups occupying different valley ecozones but a relatively small population. In order to establish the colony Wari officials invested a great deal of labor and resources in the upper drainage, which engaged local and colonial populations. In this paper, I consider imperial expansion as a process, which was a multi-generational affair. I examine the construction of three major sites: Cerro Baúl, Cerro Mejía, and Cerro Petroglifo, as well as the timing of these projects, which may represent different waves of colonization or regional transformations resulting from long-term interactions.

Nathan, Smiti (New York University)

[107] *Midnight at the Oasis: Past and Present Agricultural Activities in Oman*

Since the Early Bronze Age in Oman (ca. 3100 B.C.E. to 2000 B.C.E.), oasis agricultural communities have held social and economic importance in Southern Arabia. Throughout the Arabian Peninsula there are varying microclimates. This paper focuses on northeastern Oman, where an arid landscape is a defining environmental characteristic. In order to successfully maintain an agrarian lifestyle in these environs, strategic decision-making was key. This paper brings together previous work on agricultural activities and the author's recent ethnoarchaeological research to explore how select nightly activities, including irrigation and plant propagation, were integral in the maintenance and success of Omani oasis communities.

Nathan, Rebecca [123] see Herrmann, Edward

Naudinot, Nicolas (University of Nice)

[242] *Lithic Production, Management and Mobility Strategies Adaptation during the GS-1 and Early Holocene in North-Western France*

The second half of the Late Glacial is marked in north western Europe by a major climatic instability with clear consequences on the vegetation and in resources density and distribution. At the end of this period, the GS-1 cooling is well recorded and is one of the most important of these events. During this period, hunter-gatherer groups experienced major changes in a large part of Europe extended from Spain to Scandinavia. This period is marked by the rapid spread of a phenomenon characterized by a massive return of blades associated with a particularly invested technology. This period is in clear rupture with the previous millennia (GIS-1) marked by the "azilianization process" of the Magdalenian societies and illustrated by a progressive reduction of technical investment in lithic productions. The development of this new lithic equipment goes with changes in mobility patterns, tool management strategies or symbolic system. Did the GS-1 cooling and the rapid Holocene warming play a role in these changes? Some of our data would suggest that it is the case. The situation is however probably much more complex and it is impossible to explain such a complicated phenomenon by a simple deterministic equation.

[242] *Chair*

Naumann, Elise (Department of Archaeology, Conservation and History)

[192] *Diet and Slavery in Viking Age Norway—The Potential of Isotope Analyses of Human Remains in Studies of Social Differences*

Viking Age Norway was a society structured by clear social differences. Archaeological finds from burials and settlements show a hierarchical distribution of material goods among the Norse, although the distribution of food has traditionally been difficult to trace. In the last few decades, advances in isotope analyses of human remains have made possible a discussion of these aspects, providing information on individual dietary variation. Considering the harsh climate of Scandinavia, the control over and access to different food sources is likely to have been of great significance. By comparing individual dietary composition, it is possible to discuss both the food distribution in relation to social position and the nature of such a distribution.

Six Viking Age burials from Flakstad in northern Norway have been analysed for isotopic composition, three of them containing remains from more than one individual. The results illuminated a possible differentiation between individuals treated in different ways in the burial context, and also a probable variation in food consumption connected to social position. In this paper I will discuss the possibility of identifying slaves in Viking Age Norway through dietary studies of human remains, exemplified by the isotopic results from the Flakstad study.

Naumec, David [61] see McBride, Kevin

Navarro Rosales, Mariana (PACJ)

[169] *Terraza 504, aproximaciones a su función y conformación dentro de Cerro Jazmín*

El pasado prehispánico de la sociedad Nuu Savi ha sido explorado por diversos investigadores desde la década de los sesenta del siglo XX. A pesar de sus valiosas contribuciones, existen aún muchas interrogantes en torno a sus modos de vida, su organización social y urbana. Durante la temporada 2014 del Proyecto Arqueológico Cerro Jazmín se excavó una terraza fechada por radiocarbono en la fase Ramos temprano (100–200 a.C). La exploración parcial de la Terraza 504 reveló importantes diferencias entre los elementos que caracterizan a una unidad doméstica, expresadas en su arquitectura, costumbres funerarias y material cultural cerámico que permiten inferir sobre las actividades realizadas en esta área, las cuales apuntan a que T504 fungió como un área de posible producción artesanal y/o de almacenaje. El análisis de los vestigios arqueológicos que se presentan en esta ponencia nos permitirá además, ahondar en la función de dicho espacio en la conformación espacial y funcional de la antigua ciudad mixteca.

Navarro-Farr, Olivia [145] see Robison, Jade

Navarro-Farr, Olivia (The College of Wooster), Michelle Rich (Los Angeles County Museum of Art) and Stanley Guenter

[256] *Queens and Statecraft: Royal Women as Agents of Kaanul at El Perú-Waka'*

Recent research has shed tremendous light on the impact of two generations of royal women of Kaanul on the classic Maya city of El Perú-Waka'. Lady

Iloom and Lady K'abel facilitated royal bonds through marriages to Waka' rulers, and reigned there during the Early Late and Mid-Late Classic periods, respectively. In this paper, we address the wide ranging sources of evidence from Waka' that speak to these linkages, including monuments with preserved texts, and royal burials from three of the site's primary ceremonial locales: the Northwest Palace, the city's main civic-ceremonial Fire Shrine, and the restricted Mirador Complex. We also present fine-grained analyses of materials deriving from these mortuary contexts, which underscore that multi-generational marital ties were critical to Kaanul's socio-political traction at Waka', a strategic city along the north-south oriented "royal road" that connected Calakmul to vassals and allies to the south. The legacy of enduring ceremonial reverence shown to these Kaanul Queens illustrates their importance in the creation and maintenance of the Kaanul hegemony.

Navarro-Farr , Olivia [184] see Hubbard, Eric

Navel, Jeffrey [84] see Dennison, Meagan

Neff, Hector (California State University-Long Beach)

[292] *Luminescence and Radiocarbon Dates from Plumbate Production Contexts*

Plumbate, the most widely distributed pottery of Pre-Columbian Mesoamerica, has been sourced to the Pacific coastal region of Soconusco, near the present international border between Mexico and Guatemala. In recent fieldwork, several Plumbate production contexts were excavated. In addition to large volumes of Plumbate and Plumbate wasters, these deposits contain large amounts of wood ash and solid ceramic cylinders of various sizes, from finger-size up to rolling-pin size. Complicating interpretation of the deposits, salt production by the sal cocida technique was undertaken at some of the production locations both prior to Plumbate production and subsequently, during historic times. Luminescence dates on Plumbate, solid ceramic cylinders, and salt-production vessels together with radiocarbon dates on charcoal from the deposits help unravel the sequences of production activities and provide absolute dates for the temporal span of the Plumbate industry.

[57] *Discussant*

Neff, Hector [91] see Myers, Emlen

Negrino, Fabio [211] see Riel-Salvatore, Julien

Neiman, Fraser [36] see Ptacek, Crystal

Neiman, Fraser (Monticello)

[272] *How can Evolutionary Models and Archaeological Evidence Help us Understand Change in the Household Economies of Slave Villages on Nevis and Kitts?*

Early-modern slave village sites in the eastern Caribbean are littered with both locally-made "Afro-Caribbean" and imported European ceramics. Archaeologists have focused on the former as an expression of identity, while ignoring copious variation in time and space in both classes of ceramics and the causal mechanisms that might be responsible for it. This paper embeds evolutionary models of costly signaling and markets in a larger multi-level selection framework to offer a tentative explanation for ubiquitous household production of Afro-Caribbean ceramics and a previously unrecognized sudden increase in the abundance of imported ceramics in the late-eighteenth century on Nevis and St Kitts. The evidence is drawn from recent STP surveys on slave village sites and neutron activation analysis of "Afro-Caribbean" sherds. The models show how archaeological patterns can be traced to the disruption of food imports from North America, which caused mass mortality among enslaved people and led governing coalitions of slave owners to introduce new institutions from Jamaica to support independent food production by the enslaved and their participation in state-supported market exchange.

[202] *Discussant*

Neitzel, Jill (University of Delaware)

[195] *His Life before He Died: Pueblo Bonito's Burial #14*

More than a century of intensive archaeological investigations in Chaco Canyon, New Mexico, has produced a vast literature on all types of remains and alternative theories about the development, organization, and collapse of Chacoan society. But often missing in this overwhelming amount of information is the lived experiences of the prehistoric Chacoans themselves. This paper synthesizes Chacoan archaeology from the perspective of one of the canyon's residents. Pueblo Bonito's Burial #14 is best known for his violent death and subsequent internment with the Southwest's most lavish mortuary assemblages. Here, his life in Chaco Canyon is reconstructed.

Neivens, Nina (Tulane University)

[109] *Discussant*

Neller, Angela (Wanapum Heritage Center, Grant County PUD)

[266] *Collaboration and Partnership: The Columbia Plateau Inter-Tribal Repatriation Group*

The Columbia Plateau Inter-Tribal Repatriation Group consists of the tribes and bands in the Pacific Northwest states of Washington, Idaho, and Oregon. The Colville, Umatilla, Yakama, Nez Perce, and the Wanapum Band of Priest Rapids have come together to undertake the repatriation of human remains and funerary objects from the Columbia Plateau. The Plateau tribes have an inherent responsibility under their religious beliefs and practices to care for the ancestors buried within their homeland. These practices form the basis of identity and value systems for Plateau Indians. As descendent communities of the people that have lived on the Columbia Plateau for thousands of years joint efforts began in 2005 with the repatriation of human remains and funerary objects from the Smithsonian Institution. The right thing to do is to work together to achieve repatriation goals in the most expedient manner. In the past respective tribes made counter claims that were detrimental for repatriation of the ancestors. Today as we work together repatriation decisions are made

by tribal policy and religious leaders. The benefits we gain include building trust, forming strong working relationships, and pulling resources together during the preparation, reburial, and ceremonial aspects of repatriation.

[202] *Discussant*

Nelson, Margaret [40] see Kamp-Whittaker, April

Nelson, Kit (New Orleans Center for Creative Arts) and Paul Reed (Archaeology Southwest)

[43] *Reassessing Taos Area Archaeology: What We Still Don't Understand in 2015*

Like many areas of the American southwest, the Greater Taos region has a long history of research, spanning over 100 years. The majority of investigations have focused on either end of the research spectrum. Some being very narrowly centered on specific issues or sites usually resulting from the particular interests of a researcher, while others are very generally focused on data collection resulting from CRM research. This dichotomy of data collection/research has resulted in a highly variable picture of prehistoric archaeology in the region. In this paper, we assess the current state of knowledge, provide a synopsis, and suggest research directions to fill the data voids.

Nelson, Shaun (Utah National Guard)

[73] *Discussant*

Nelson, Elizabeth (Max Planck Institute for the Science of Human History), Emily Sharp (School of Human Evolution and Social Change, Arizona) and Tiffany Tung (Department of Anthropology, Vanderbilt University)

[206] *Epidemiological Crisis with Imperial Collapse? Investigating the Osteological Evidence for Bacterial Infections among post-Wari Communities in the Peruvian Andes*

The socio-political decline of the Wari Empire and a severe drought ca. A.D. 1000/1100 led to significant changes in health among those who lived in the former imperial core. The political turmoil, social upheaval, and prolonged drought coalesced to create poor community health. Infectious disease appears to have been an aspect of morbidity that dramatically changed relative to the preceding era of Wari rule. Here we examine the skeletal evidence for bacterial infections among post-Wari populations from the former capital city (Huari). Because human remains were commingled, we observed each category of skeletal elements for lesions, documenting that, among all ages combined, 11/2532 ribs (.4 percent) and 82/1777 thoracic vertebrae (5 percent) exhibit lesions suggestive of brucellosis and/or tuberculosis. Juvenile remains present a higher prevalence: 79/342 thoracic vertebrae (23 percent) exhibit those lesions. Consistent with expectations of how socio-political decline and ecological stress can contribute to negative health outcomes, these lesions appear only in the post-Wari samples; they are absent in the approximately 300 individuals from the preceding Wari era (Tung 2012). This suggests the development and/or increased transfer of these infectious diseases in response to changes in political and environmental conditions.

Neme, Gustavo [94] see Gil, Adolfo

Neme, Gustavo, Adolfo Gil (IANIGLA-CONICET-Museo de Historia Natural de San R), Miguel Giardina (IANIGLA-CONICET-Museo de Historia Natural de San R) and Clara Otaola (DIPA-CONICET-Museo de Historia Natural de San R)

[204] *Wild Resources and Domestic Plants in the South American Farmer's Frontier*

Southern Mendoza region has been considered the meridional boundary of South American farmers, which arrive at this region ca 2000 years B.P. At the time of the Spanish arrival, there was coexistence among north Patagonian hunter gatherers and southern Andean farmers along Atuel and Diamante basins. However the real impact of the first domesticates (corn, squash, quinoa, and beans) as well as how their latitudinal distribution could vary through time are still on debate.

Different lines of evidences had been employed to discuss this topic giving an ambiguous picture of the archaeological record. This made difficult our interpretation about the variability of subsistence strategies along the region. In this poster we present different archaeological proxies (stable isotopes, archaeofauna, archaeobotany, and lithics), with the aim of clarify the distribution of domesticates and the relationship with the regional ecology.

Neri, Francesca (Northern Arizona University)

[195] *Cross-Cultural Examination of Mortuary Practices of the Southern Sinagua and Prescott Culture*

The burials from the Oak Creek Valley Pueblo and the Dewey Archaeological sites provide data for interpreting the mortuary practices and burial rituals of the Southern Sinagua and Prescott cultures. The variability exhibited in the burials uncovered at these sites, which include the remains of an adult male, two adult females, infant burials, and one dog, allows for an examination of mortuary practices as they relate to social structure and the role of children, symbolism, environmental influences on ritual, and the utilization of space. This presentation addresses the methods used for documenting the skeletal remains and practices of interment, a discussion concerning examination of associated funerary objects, and the locations of these burials as related to site layout and overall spatial context. Studying these sites will yield data important to the mortuary rituals of these cultures and allow for a review and comparison of the cultural behaviors between the loci.

Nesbitt, Jason [31] see Matsumoto, Yuichi

Nesbitt, Jason (Tulane University)

[31] *Variations in Initial Period Ceremonial Architecture at the Caballo Muerto Complex*

The Caballo Muerto Complex is well known for the presence of numerous Initial Period platform mounds thought to have functioned as temples. What is less known, is that some of the mounds, including Huaca Herederos Grande and Huaca Cortada were associated with smaller-scale buildings that also seem to have functioned as religious structures. In this paper, I discuss investigations of a square abode building found at the base of Huaca Cortada. Excavation of the structure demonstrated that the floor of the building was completely clean, with no evidence for associated artifacts or internal features. Furthermore, examination of the stratigraphy showed that prior to abandonment the building was intentionally buried, probably as a form of "temple

entombment." I argue that this building and others like it at Caballo Muerto functioned for specific types of rituals restricted to certain segments of society. To demonstrate this point I compare the Huaca Cortada building with similar structures present at Initial Period centers in the Lurín and Casma valleys.

[31] *Chair*

Ness, Kathryn (Peabody Museum, Harvard University)

[51] *"Reverse Colonialism": The Multi-Directional Nature of Cultural Exchange in the 18th-Century Spanish Atlantic*

In 1492, Spain "discovered" the Americas and proceeded to lay claim to as much of the New World and its natural resources as it could. The colonization and territorial expansion that followed has been fodder for clergy, scholars, historians, and archaeologists throughout the intervening centuries. The majority of these discussions, however, address the impact of Spain's imperial activities in the Americas, specifically during the "Golden Age" of the sixteenth and seventeenth centuries. In this paper, I explore the multi-directional nature of this trans-Atlantic cultural exchange by considering the impact the Americas had on daily life in Spain, especially during the eighteenth-century Bourbon dynasty. This period was one of intense cultural refashioning throughout the Atlantic as the new French-based dynasty gave rise to an increase in non-Spanish, European fashions and philosophies in the Spanish Empire. Similarly, exotic American goods like chocolate permeated from the Spanish upper classes to middle-class households, indicating that significant portions of Spanish society had access to and consumed foreign goods and ideas. Using the eighteenth-century Spanish Atlantic as an example, I aim to emphasize the importance of considering how a colony can influence the motherland.

[51] *Chair*

Neubauer, Fernanda (University of Wisconsin-Madison, CAPES Foundation)

[232] *Chipped Stone and Hot Rock Technology: A Late Archaic Example from the Upper Great Lakes*

This study combines a detailed analysis of hot rock and chipped stone technologies in order to investigate behaviors related to subsistence and settlement strategies, domestic life, and knapping activities. This paper contributes to the research of Late Archaic lithic technology on Grand Island in Michigan's Upper Peninsula (UP). There, fire-cracked rocks (FCR) dominate the archaeological assemblage, yet relatively little is known of the roles that they played in the lives of the island's ancient inhabitants. This comprehensive analysis of over 40,000 lithics from six sites on the island will more than double the current number of c. 34,000 lithics analyzed in the entire UP from dated Late Archaic habitation and raw material extraction sites. The goal of the study is to contribute to a new appreciation of FCR beyond current approaches that are often limited to basic quantification or presence/absence reporting. With such massive quantities of the material available for analysis at many hunter-gatherer sites, the recontextualization of FCR may lead scholars to a better understanding of the ancient diets and the behaviors associated with food production and site formation processes.

Neumannova, Klara [146] see Kvetina, Petr

Neusius, Sarah [9] see Styles, Bonnie

Neusius, Sarah (Indiana University of PA)

[176] *Faunal Database Preservation and Collaborative Zooarchaeology by the Eastern Archaic Faunal Working Group*

The newly formed Eastern Archaic Faunal Working Group (EAFWG) has brought zooarchaeologists together with funding from the US National Science Foundation. Our group is seeking to preserve Archaic period faunal databases from the interior portions of the Eastern Woodlands in tDAR (the Digital Archaeological Record), an international digital repository for archaeological databases and records of investigations. Members of the EAFWG have uploaded over 28 separate datasets representing more than 14 archaeological projects into tDAR, and additional relevant faunal databases are being sought for inclusion. Our collaboration first explores the comparability of the existing databases by modifying taphonomic and contextual protocols developed by Southwestern zooarchaeologists in order to make them broadly applicable within the Eastern Woodlands. Ultimately we intend to use the tools available in tDAR to conduct integrative analyses at multiple scales that focus on how to interpret the use of aquatic resources such as fish, freshwater mussels, waterfowl, and aquatic mammals by Archaic hunter-gatherers. Working group meetings held as 2–3 day workshops when participants are free of their normal responsibilities and can focus on shared experiences and issues are fostering our collaboration. Our approach models new ways for zooarchaeologists to address macro scale archaeological questions.

[9] *Chair*

Neusius, Phillip (Indiana University of PA), Ben Ford (Indiana University of PA), Bill Chadwick (Indiana University of PA) and Sarah Neusius (Indiana University of PA)

[208] *Partnering for Preservation: IUP's Role as a State University*

Since its inception in 1987, as an applied research center at Indiana University of Pennsylvania (IUP), Archaeological Services has had a mission of providing educational opportunities for IUP students and service for private and public entities in cultural resource management. As a state university, IUP has been in a position to create unique partnerships with local, state and federal agencies. These have ranged from co-operative agreements with county and city governments to memoranda of understanding with agencies such as the Pennsylvania Department of Transportation, the National Forest Service, and the National Park Service. These arrangements have utilized IUP's role as a state owned entity to create flexible and cost effective means towards preserving cultural resources in Pennsylvania. In addition to providing service to the region, these opportunities have also provided hands on training for hundreds of IUP students over the last 28 years.

Neves, Eduardo Góes [49] see Hilbert, Lautaro Maximilian

Neves, Eduardo (University of São Paulo)

[282] *Discussant*

Neville, Holly (Florida Institute for Hieroglyphic Research)

[92] *3D Digitization of Spindle Whorls from Pre-Contact Central Mexico*

Three-dimensional digitization technology is opening up a new world of opportunities for the analysis and manipulation of artifacts without the risk of extraneous handling of the original, which could compromise preservation. This poster examines the practice of digital scanning on a collection of Mesoamerican spindle whorls at the South Florida Museum in Bradenton, Florida, discussing the hardware and software used for digitization, as well as the process of creating accurate three-dimensional scans of each item in the collection. Digital scanning technology can be used to better understand how spindle whorls were used, and what designs were better for certain fabrics and why. These scans detail intricate facets of the design and structure that might not be visible to the naked eye, and which can assist in the identification of cultural and/or religious themes represented in the construction and decoration. The spindle whorls in this collection are from the general area of pre-contact Central Mexico, and I hope to conclude what type of fabric each whorl was used with, and whether this indicates use by elites in the society or in a more agrarian or household context.

[92] *Chair*

Newbury, Diane [63] see Thompson, Katlynn

Newlander, Khorl (Department of Anthropology & Sociology, Kutztown University)**[114]** *Using Analytical Nodules to Assess the Integrity of Paleoindian Surface Lithic Scatters in Eastern Nevada*

Minimum analytical nodule analysis is a useful tool for recognizing the variability present within a lithic assemblage. In turn, this type of analysis permits a more complete understanding of lithic technological organization. Typically, lithic analysts use macroscopic and microscopic characteristics, as well as spatial associations, to partition lithic assemblages into subgroups, or analytical nodules, that we assume reflect a limited set of production episodes or the role of a particular type of raw material within a technological system. In this study, I do not use analytical nodules to achieve a better understanding of technological organization, as is common. Instead, I use chert analytical nodules, defined on the basis of macroscopic, microscopic, and chemical properties, to investigate the integrity of Paleoindian surface lithic scatters in eastern Nevada. I demonstrate how the spatial analysis of analytical nodules may help us address a long-standing problem—namely, establishing the spatiotemporal integrity of the surface lithic scatters that dominate the Great Basin archaeological record.

Newsom, Lee (Penn State University)**[222]** *Islands as Gardens: Plant Translocations by Caribbean Indians as a Dynamic and Multiscalar Form of Cultural Niche Construction, with Emphasis on Puerto Rico and the Evidence for Psychoactive/Ritual Plant Use*

I consider pre-European plant introductions of exotic fruit trees and other useful plants as a multi-faceted reflection of indigenous plant use, culminating a mosaic of vegetative components in a constructed environment. I focus in particular on the plant constituents of the cajoba ritual complex, drawing especially on recent data from Tibes and Jácana (Puerto Rico), along with relevant ethnographic records from mainland South America that describe ethnobotanical practices associated with psychoactive plants. The resulting analysis lends new insights into Caribbean Indian ritual practices and cultural niche construction.

[290] *Discussant*

Newsom, Lee Ann [290] see Ostapkowicz, Joanna

Newton, Matthew (Aucilla Research Institute)**[164]** *A Good Place to Be: 2015 Phase I Investigations at Wakulla Springs State Park, North Florida.*

Preliminary archaeological investigations took place at Wakulla Springs State Park, in Wakulla County, Florida, during August to September of 2015. The project's primary objective was to locate areas containing dense artifact clusters, in an effort to proceed with Phase II and Phase III investigations. The abundance of cultural materials found at previously documented sites within the park is a testament to this rich archaeological site, and warrant continued research efforts. Furthermore, few sites are known to exist which show several human occupations spanning from 14,500 years ago to the present. This paper discusses in detail the evidence recovered during these most recent investigations, as well as the innovative recovery methods employed for the project. Research will continue throughout 2019 at multiple locations in the park, using new evidence to achieve narratives which show the relationships between humans and this beautiful habitat, showing why Wakulla Springs has always been "A Good Place To Be."

Neyland, Robert and Alexis Catsambis (Naval History and Heritage Command)**[83]** *2016 Navy Sunken Military Craft Act Regulations—32 CFR 767*

The Sunken Military Craft Act (SMCA) was enacted on October 28, 2004. The SMCA preserves and protects from disturbance all sunken military craft owned by the U.S. government, as well as foreign sunken military craft submerged or buried in the seabed within U.S. territorial waters. The Navy's sunken ship and aircraft wrecks remain U.S. property regardless of their location in U.S., international, or foreign waters. Ownership is not changed by the passage of time. These wrecks may not be disturbed without a permit under newly crafted Navy regulations--32 CFR 767. This presentation considers the new regulations, the permitting program under the SMCA, enforcement, and these new and unique responsibilities of the Navy. Naval History and Heritage Command (NHHC) is the manager of the Navy's 3,000 ship and 14,000 aircraft wrecks and implements the Act and regulations on behalf of the Department of the Navy. The new regulations will raise the bar for preserving and interpreting these important cultural resources, many of which are also war graves and the final resting places for those who have sacrificed their lives for country throughout the United States history.

Neyt, Bert [79] see Vandam, Ralf

Nials, Fred L. [55] see Vint, James

Niccolucci, Franco [261] see Richards, Julian

Nicholas, George (Simon Fraser University)**[10]** *Pragmatism at the Intersection of Indigeneity, Cultural Property, and Intangible Heritage*

When descendant groups are denied direct and meaningful engagement in decision making, heritage management policies are ineffective at best and harmful at worst. Access to and control over one's own heritage is a basic human right essential to identity, wellbeing and worldview. The historic separation of Indigenous peoples from their heritage not only results in considerable economic and cultural harms, but is a form of violence. Community-based heritage initiatives are capable of challenging colonial structures in the research process without compromising the integrity of archaeology. Local and international approaches to negotiated practice are discussed, as is an example of activism to protect ancestral burial grounds and sacred sites.

Nicholas, George [144] see Gaudreau, Mariane

Nichols, Teresa [30] see Thomas, Jayne-Leigh

Nichols, Kristi Miller (Raba Kistner Environmental, Inc.), Clint Laffere (Raba Kistner Environmental, Inc.), Laurie M. Steves (Raba Kistner Consultants) and Richard A. Sample (Raba Kistner Environmental, Inc.)**[78]** *The Use of 3-D GPR As An Aid in the Rediscovery of Spanish Colonial Acequias in San Antonio, Texas*

Archaeologists at Raba Kistner Environmental, Inc. (RKEI) have been utilizing 3-D ground penetrating radar (GPR) surveys to rediscover the locations and document the construction techniques of irrigation ditches in San Antonio, Texas. Using 3-D GPR, in conjunction with EM-31 surveys, archival research, and archaeological backhoe trenching has allowed us to determine under what geomorphological and burial conditions the GPR yields reliable results. This paper reviews recent RKEI projects involving GPR surveys, highlighting the processes and final results during acequia rediscoveries.

Nichols, Teresa (Indiana University), April Sievert (Indiana University), Jayne-Leigh Thomas (Indiana University) and Anne Pyburn (Indiana University)**[112]** *Learning NAGPRA: Nationwide Survey Results*

Although the Native American Grave Protection and Repatriation Act (NAGPRA) was passed as federal legislation in 1990, it seems that many students do not receive comprehensive coverage of the law and its connections to the broader disciplinary histories of anthropology and museum studies and to professional research ethics. Indiana University was awarded NSF grants in 2014 and 2015 to conduct a nationwide study on NAGPRA teaching and training and to collaborate with specialists in preparing improved teaching materials. This poster will present some preliminary analyses of data collected from interviews and two online questionnaires directed towards educators and students in anthropology and museum studies related college or university programs. Students were asked about their coursework experiences, their knowledge of NAGPRA, and what sorts of internships or extracurricular opportunities would contribute towards their future career. Educators answered questions on their educational and professional experiences relating to ethics and NAGPRA, as well as their teaching interests and thoughts on student mentoring and professionalization. Both groups were also asked their opinions on the respective benefits and harms of the law. The results of this research will be used in the creation of new pedagogical materials.

Nichols, Deborah (Dartmouth College)**[178]** *Before Teotihuacan: The Origins of Complex Society in the Northeast Basin of Mexico*

Teotihuacan grew explosively ca. 100 B.C. to become the most influential city in Mesoamerica. For several decades little research has been directed toward understanding the origins of complex society in the Teotihuacan Valley. Recent archaeological investigations at the Early-Middle Formative site of Altica provide a fresh perspective on dating the initial establishment of agricultural villages, early social and economic differentiation, and the development of intra- and inter-regional exchange networks to test comparative models of political economy.

[129] *Discussant***Nicholson, Christopher****[146]** *A Paleoclimate model of Neanderthal landscape-use during the last interglacial*

Obstacles to our understanding of Neanderthal (*Homo neanderthalensis*) land-use patterns during the Last Interglacial (130kya-116kya, Marine Isotope Stage 5e) include not only the scarcity of sites in Europe but also a lack of knowing what the landscape may have looked like during this time. This research explores the influence of climate and seasonal variability on Neanderthal land-use. Recently developed global climate models are capable of simulating past climate variables (e.g., precipitation and temperature), and geographic information system (GIS) tools can then be used to interpolate these data to model the niches of past organisms into paleoclimate zones. This study uses Maximum Likelihood Classification analysis in GIS to create a mosaic landscape of 22 paleoclimate zones to reconstruct what Europe may have looked like during the Last Interglacial Eemian. The modeled paleoclimate zones show there was a preference for site locations in Warm Temperate and Mesic climates. It also shows that Neanderthals selected sites near climate zone margins to exploit an array of food resources. The Warm Temperate and Mesic climate regime may have been preferred as a more climatically stable region, leading to fewer fluctuations in a seasonal subsistence base, resulting in less biological stress and improved fertility rates.

Nicolas, Richard (California State University Los Angeles)**[93]** *The Role of Lithic Artifacts in the Interpretation of RB-25-A5*

In 2014, the California State University, Los Angeles Sacred Landscape Archaeological Project (SLAP) began investigation of a deep pit with a small grotto at its northern end. In 2015, the pit was excavated to bedrock only to discover that the feature was a collapsed chultun. Noteworthy was a plastered platform that encircled the collapse pit. A dense concentration of artifacts was associated with the platform and pit but this dropped rapidly only a few meters from the platform indicating the complex was a heavily utilized activity area. Previous investigation of RB-25-A5 interpreted the feature as a trash pit belonging to a lithic workshop because of what was thought to be a high concentration of chert flakes. SLAP recovered similar pieces still within their matrix of soft dolomitic limestone. A thorough analysis separated the natural materials and confirming the presence of few formal artifacts.

Niell, Paul (Florida State University)**[3]** *Heritage and City Foundations in Nineteenth-Century Havana, Cuba*

According to national legend, Havana, Cuba, was founded under the shade of a ceiba tree whose branches sheltered the island's first Catholic mass and meeting of the town council (cabildo) in 1519. The founding site was first memorialized in 1754 by the erection of a baroque monument in Havana's central Plaza de Armas, which was reconfigured in 1828 by the addition of a neoclassical work, El Tempete. Viewing the transformation of the Plaza de Armas from the new perspective of heritage studies, my paper investigates how late colonial Cuban society narrated Havana's founding to valorize Spanish imperial power and used the monuments to underpin a local sense of place and cultural authenticity, civic achievement, and social order. Yet, this heritage process at the ceiba tree contained a dissonance or a lack of agreement as to the significance and use of heritage based on the cultures of multiple constituencies that comprised the colonial city and its signifying forms. In this presentation, therefore, I am calling into question the utility of Heritage Studies for Spanish colonial contexts in the Caribbean.

[3] Chair

Nielsen, Axel (CONICET Argentina)

[259] *The Role of Chullpas in the Inca Conquest of the Southern Altiplano: A Symmetrical Approach*

I start with the premise that chullpas (architectural modules formed by a chamber which can be accessed by a narrow opening) are wak'as, persons with higher ontological status than humans, capable of acting in different ways (housing the dead, storing crops, guarding territories, defending communities, marking status differences among people, etc.) and settings (pukaras, villages, caves, or fields), as full members of altiplano society. I propose that chullpas were important actors in the Inca conquest of the Southern Altiplano (Lipez), collaborating with the State in the reconfiguration of local landscapes, memory, and political institutions. To justify this hypothesis, I present the changing forms, uses, and contextual associations of these architectural modules in different types of sites, including caves, pukaras, non-defensive villages, and fields. Noting the differences between Late Intermediate and Inca period chullpa characteristics and distributions, I discuss the roles these wak'as may have played in the local constitution of (or resistance to) the empire.

Nieves Colón, Maria (SHESC, Arizona State University), William J Pestle (Department of Anthropology, University of Miami) and Anne C Stone (SHESC, Arizona State University)

[160] *Preliminary Ancient DNA Analysis Suggests a Complex Origins Scenario for Pre-Contact Puerto Rican Populations*

Recent archaeological research suggests that indigenous groups in Puerto Rico stemmed from multiple and continuous migrations of continental indigenous populations. This view is supported by contemporary genetic studies, which have found evidence of genetic affinity between multiple modern Native American groups and the native ancestry components of modern, admixed Puerto Ricans. Overall, these findings challenge the traditional single-migration model for the peopling of Puerto Rico, and suggest genetic continuity between the pre- and post-contact populations. Here, we further test these findings by examining ancient DNA obtained from human skeletal remains (dated 590 to 1280 cal A.D.) from three pre-contact Puerto Rican sites: Paso del Indio, Punta Candelerio and Tibes. Preliminary results from analyses of nine complete ancient mitochondrial DNA (mtDNA) genomes suggest that pre-contact Puerto Rican individuals share genetic affinity with several South American and Mesoamerican groups (both ancient and modern). Additionally, haplotype-sharing analyses suggest there is some continuity of ancient mtDNA lineages in contemporary Puerto Ricans, although the presence of unique types among pre-contact individuals suggests some loss of ancient mtDNA diversity. These preliminary results support an origins scenario of complex and continuous admixture for pre-contact Puerto Rican groups.

Nieves-Colón, María [160] see Martinez-Cruzado, Juan

Nightingale, Sheila [211] see Thompson, Jessica

Nightingale, Sheila (City University of New York, Graduate Center), Jessica Thompson (Emory University), Alex Mackay (University of Wollongong), Flora Schilt (Universitat Tübingen) and Elizabeth Gomani-Chindebvu (Malawi Department of Culture)

[211] *Is Innovation Always the Solution? Examining Non-Specialized Lithic Technologies of the Malawian Middle Stone Age*

Interpretations of specialized lithic technologies are based in part on the assumption that environmental change modifies local carrying capacities and requires foragers to adjust their resource acquisition strategies in response. Such models often account for innovation, in the form of specialized, standardized, and increasingly complex tool forms and foraging strategies, in environmental terms: environmental pressure produces demand for innovation, and when pressure subsides, technological requirements are relaxed. During the African Middle Stone Age, innovations are asynchronous, geographically disparate, and often ephemeral. The archaeological record from the later MSA of Malawi is notable for its lack of specialized technological components—blades, points, and standardized tool forms are all absent from excavated assemblages. These patterns require a deeper interrogation of the possible range of technological and foraging responses through the environmental variability of the Late Pleistocene. Using data from over forty excavations and test pits, we question the assumptions of climate-driven models of technological elaboration, with particular focus on hyper-localized acquisition of raw materials and intra-assemblage consistency in reduction systems.

Nigra, Benjamin [205] see Osborn, Jo

Niles, Hali [291] see Austin, Tucker

Nilsson, Maria (Lund University)

[224] *Gebel el Silsila (Upper Egypt): Introducing the Archaeological Project*

Though long admired for its Pharaonic stelae, shrines, and Speos, the grand ancient site of Gebel el Silsila remains fairly unknown within mainstream Archaeology. A general idea is that the site operated merely as a sandstone quarry, but few are aware of its rich archaeology that incorporates evidence of millennia of human activity and cultural features that meet seven of UNESCO's ten outstanding values. Since 2012, the Swedish-run archaeological project works towards changing previous misconceptions, and in conducting a comprehensive archaeological study the aim is to increase the general awareness of the site's importance and unique legacy. The aim is here to present an introduction to the project, its new approaches, discoveries and results achieved so far. Epigraphic reference will be made to the recent findings of the enigmatic boat scene in the rock-cut temple, a unique stela of Amun-Ra and Thoth, and a quick summary of the complex non-textual marking system with 5000 documented signs. Archaeologically, we will explore the re-discovered Temple of Kheny with its exceptional Thutmosid limestone fragments, an administrative building known to the team as Tiberius' Stables, and round up with an announcement of the discovery of a remarkable object from the reign of Amenhotep III.

[224] Chair

Nishimura, Yoko (University of Pennsylvania)

[173] *The 'Ritualization' of Comma-Shaped Magatama Beads from the Jōmon to Yayoi Periods in Japan*

Comma-shaped magatama beads in their 'archaic' forms and materials first appeared in the Early Jōmon period (ca. 5000 B.C.) in Japan, and in their 'standardized' form and material became a major component of grave goods for the elite burials that began to be constructed from the Yayoi period (ca. 400 B.C.) onward. The contexts in which magatama beads recently excavated at Early/Middle Jōmon sites have been found indicate that they were most likely ordinary body ornaments for everyday use. Their later essential role as grave goods in the elite burials after the Yayoi period was likely the result of a 'ritualized' process in which greater significance was attached to these beads through transformation from ordinary to more formalized contexts. Bridging these two phases, magatama beads in the Late/Final Jōmon period (ca. 2500–400 B.C.) may reflect the transitional process in which they were increasingly used in more formalized contexts, including domestic rituals, and their forms and materials progressively standardized.

Nissen, Zachary (Northwestern University)

[77] *Cosmic Vision: Queering Ancient Maya Sacred Landscapes*

As a method of deconstructing and disrupting what is normative, archaeologists have used queer theory to explore aspects of the formation and intersection of identities. In this paper I illustrate how queer theory can be used beyond the study of identity by exploring the relationships between people and places. Comprising 25 cenotes, or karstic sinkholes, Cara Blanca, Belize represents one of the highest concentrations of cenotes in the Southern Maya Lowlands. A highly sacred landscape, Cara Blanca served as a pilgrimage destination during a period of several prolonged droughts (about 800–900 C.E.). Within this unique environment, Cara Blanca Pool 20 stands out as an exceptional example of the affective relationships between ritual practitioners and sacred landscapes. Consisting of a cenote and a "modified" natural limestone hill, I argue that the landscape of Pool 20 would have connected the human world to the supernatural realms of the heavens and the underworld. Breaking down this connection between people and place, I illustrate how queer theory can be used to explore affect and how a focus on moments of disorientation or confusion in archaeological fieldwork can be used to queer, or deconstruct, established interpretations of ritual and space.

[77] Chair

Nitsch, Erika [171] see Bogaard, Amy

Nivens, Joelle

[13] *Discussant*

[13] Chair

Nixon, Sam (Sainsbury Institute, University of East Anglia) and Simon Kaner (Sainsbury Institute, University of East Anglia)

[152] *Global Perspectives on British Archaeology: 'Engaging with East Anglian Archaeology through a Japanese Lens'*

This presentation introduces a project providing a new examination of the relationships between local, national and global archaeologies, Global Perspectives on British Archaeology. World Archaeology is a hugely active field of research for British archaeological institutions, with sustained field programs worldwide. In contrast, research on British archaeology sees little involvement of non-British research institutions. Within an increasingly globalised world of education and research, there appears a pressing need to engage the national archaeological agenda as fully as possible with developing global currents. Indeed, a necessary component of the pursuit of World Archaeology is surely a World/Global Perspective on our own archaeology. Our project is working in close collaboration with heritage authorities in the archaeologically-rich region of East Anglia to develop collaborative research programs with archaeological institutions from outside the U.K. Building on long-standing links, this is being developed in association with Japanese archaeologists. The key questions being investigated are as follows: What role does British archaeological heritage have beyond our borders?; How is it perceived and presented, and what is its impact within global educational and economic arenas?; How is the perception of the past amongst British communities informed by or reconceived through engagement with international perspectives on the past?

Noack Myers, Kelsey (Chippewa Cree Cultural Resources)

[29] *Preserving Our Past and Providing For Our Future: Heritage Management at Rocky Boy's Indian Reservation, Montana*

Like all Tribal Historic Preservation Offices, our staff are required to wear many hats. The diversity of projects undertaken by the Chippewa Cree Cultural Resources Preservation Department (CCCRPD) includes on-reservation resource documentation and mitigation, educational programming for the local community, development of governmental agency policies and procedures, and consultation on repatriation and current archaeological and museum research. In addition, the CCCRPD has developed the Tribal106 digital consultation system in order to facilitate timely responses to project notices received by the FCC and other agencies seeking to comply with Section 106 requirements. This program works in concert with the Tribal Field Technician program that we have developed to standardize site monitoring and reporting by tribal members who participate as our representatives during construction projects off-reservation in the nine states identified as the ancestral homeland of the Chippewa (Ojibwa) and Cree (Nei-yahw) people. All of these activities are undertaken to reinforce the sovereignty of federally-recognized tribes as a whole, and to promote positive and productive ongoing relationships within our tribal community and with non-tribal entities.

[203] *Discussant*

Noble, Gordon [103] see Mitchell, Juliette

Noel, Stephan [100] see Perdikaris, Sophia

Nolan, Kevin (AAL, Ball State University), Christine Thompson (AAL, Ball State University), Shelbi Long (AAL, Ball State University), Erin Donovan (Indiana University-Purdue University Indianapolis) and Erin Steinwachs (AAL, Ball State University)

[112] *A Battlefield with a View: Visibility and Weighted Cost Path Modeling of the Battle of the Wabash*

The Applied Anthropology Laboratories has conducted five years of research at the site of two of the most significant battles in the Northwest Territory: Battle of the Wabash (1791) and the Battle of Fort Recovery (1794). A recent survey and GIS analysis has shed new light on the Battle of the Wabash and particularly the Native American Confederacy's (NAC) strategy and actions. Using visibility weighted cost paths we were able to predict the locations of survey finds. The survey results were used to refine our GIS model of the NAC strategy. Significantly, our survey located the probable location of the NAC staging ground and identified two or three avenues of attack. Further, our application of visibility analysis reveals the factors of the setting and terrain that contributed to St. Clair's defeat at the Battle of the Wabash.

Nolan, Kevin [285] see Hill, Mark

Noldner, Lara (Iowa Office of the State Archaeologist and the University of Iowa)**[266]** *Attimoni (ah-jee-MOOHN)—The Stories We Have to Tell: relationships among the Meskwaki Nation, tribes with historic ties to Iowa, and the Iowa Office of the State Archaeologist*

A long-standing relationship has existed between the University of Iowa Office of the State Archaeologist (OSA) and tribal entities including the Meskwaki Nation. The precedent-setting burial law established in Iowa in 1976, 14 years prior to the passage of NAGPRA, has long required equal treatment and reburial of Native American remains. The law gave the OSA statutory authority for upholding the law and established the OSA Indian Advisory Council (IAC). Maria Pearson (Yankton Sioux) and Donald Wanatee (Meskwaki) were instrumental in passage, implementation, and success of the law and served on the OSA IAC from the start. The OSA and its Burials Program (recently renamed the Bioarchaeology Program) has an exemplary record of collaboration in the protection and proper treatment of human remains, its success leading to a variety of other tribal collaborations. The OSA, the IAC, and tribes took a proactive approach to allow reburial of culturally unidentifiable remains prior to development of NAGPRA regulations, ultimately developing a NAGPRA-approved process for the reburial of culturally unidentifiable remains in Iowa's established cemeteries.

[266] *Chair*

Nondédéo, Philippe (CNRS France), Cyril Castanet (Université de Paris 8), Louise Purdue (CNRS), Eva Iemonnier (Université de Paris 1) and Dominique Michelet (CNRS)**[96]** *Introduction to Research at Naachtun: Archaeological and Paleoenvironmental Issues*

The Maya site of Naachtun is an important regional center of the Classic period, located in northeastern Peten. Founded after the decline of the Preclassic Centers of the Mirador Region, Naachtun is occupied roughly during a millenary until its abandonment (ca. A.D. 950). This site, settled on the margins of a huge bajo, is a good case study to understand strategies of resources management (water supply, soils, wood, fauna, and shells among others). All are available in its immediate vicinity, but we must wonder to which extend environmental changes (anthropic or climatic) during the Classic period could have affected the procurement of these resources. After presenting the Naachtun Project with its different lines of investigation, the site setting and the local environment, and after a brief overview of the history of its occupation, we will expose the issues of the archaeological and paleoenvironmental studies and propose a first general balance of the relationships between society and environment.

Noneman, Heidi [67] see VanPool, Christine

Norman, Scotti (Vanderbilt University)**[281]** *Conversion and Revitalization in a Taki Onqoy Center of Highland Peru (Chicha—Ayacucho)*

In the first generation after the Spanish conquest of Peru, indigenous Andeans and Spaniards entered into a period of change in which daily practices, traditions, and religion were negotiated and reshaped. A local response to Spanish attempts at Christian conversion was the cultural revitalization movement of Taki Onqoy (Quechua-dancing sickness). Primary sources suggest that this movement was practiced by local Andeans and manifested through the rejection of Spanish religious beliefs in favor of a return to huaca worship. Conversely, secondary sources have debated the very existence of the movement. This paper presents the preliminary results of the first large-scale excavations at Iglesiachayoc, an Inka and Early Colonial Period settlement whose inhabitants were Taki Onqoy practitioners. As the first archaeological project to actively investigate Taki Onqoy practices, this project provides insight into the material signatures of Taki Onqoy, and contributes physical data to a debate which has been only text-based to date.

Norton, Holly (History Colorado) and Eva Hulse (Archaeological Investigations Northwest, Inc.)**[243]** *The Shovelbum Economy*

It has long been common knowledge that "most" archaeologists attain gainful employment in Cultural Resource Management (CRM) related fields rather than in academic institutions. By and large there is an accepted idea of what such a career trajectory looks like—there are many archaeologists who have built successful careers in CRM while adding to scientific knowledge and policy, or who have built laudable businesses. The vast majority of those employed in CRM, however, are low-level field and laboratory technicians. What do their lives look like? Are they able to contribute to the body of archaeological knowledge or effect policy changes? Are they able to support themselves? Is there a general experience of upward mobility? To answer such questions, this paper will present data from a variety of sources, including new nation-wide survey data collected by the authors.

[243] *Chair*

Norwood, Alexandra (Arizona State University)**[39]** *Formal Open Space and its Relationship to Governance in Premodern Cities*

Formally defined open spaces in cities give people a designated forum for interaction and impact how common people perceive each other and their authority. There is a critical lack of understanding of the origin of these spaces in the earliest cities and their social contexts. I will examine a sample of premodern cities, including archaeologically and historically documented examples, to clarify why formal open spaces exist, both in ancient cities and modern ones. This project stems from "Service Access in Premodern Cities" at ASU, a project dedicated to transdisciplinary research on comparative urbanism. Each of the cities in this projects have been scored on a scale of governance based on that of Blanton and Fargher (2007). I will measure the formal open space in these cities using GIS. Relating plaza area to the size of the city and the form of governance will show whether or not plazas can be classified as a public good according to Blanton and Fargher's classification and whether cross-cultural patterns exist regarding the relationship of governance to public space. A more complex understanding of the dynamics of early cities and their governance is critical to understanding the evolution of

both human society and the modern city.

Nossa, Eraina (Mark Twain National Forest) and William MacNeill (Mark Twain National Forest)

[267] *Partnerships, Preservation, and Public Archaeology: Working together to retrace the Trail of Tears across the Mark Twain National Forest*
The Mark Twain National Forest manages slightly less than 1.5 million acres, accounting for approximately 5 percent of the landmass in the state of Missouri. As a variety of factors continue to influence, and sometimes complicate, the Forest's land management practices, it has become increasingly important to work with other agencies and organizations in order to accomplish the shared goals of identifying, protecting and interpreting the significant cultural resources held in the public trust. As the largest public landowner in the state, it is no surprise that all three of the major land routes of the Missouri portion of the Cherokee Trail of Tears cross Forest Service land. However, the exact locations of several segments of the Trail of Tears have yet to be identified in the field, and many other questions regarding the history of the trail remain unanswered. In recent years, the Forest has sought to develop innovative strategies to manage this important historic resource. This poster examines the ways in which the Mark Twain National Forest has had success working with other federal and state agencies, as well as educational and non-profit institutions to leverage funds, personnel, and volunteer hours to retrace the Trail of Tears across Missouri.

Novotny, Claire (University of North Carolina - Chapel Hill)

[54] *Decision-making and the Practice of Community Archaeology in Southern Belize*
In the Maya region, sometimes communities are not consulted about access to archaeological sites, research programs, or the management of local heritage once research is completed. Consequently, one source of inequality between archaeologists and local communities is access to decision-making as a form of cultural capital. By positioning ourselves as primary decision-makers, archaeologists can inhibit access to knowledge about the past. The Aguacate Community Archaeology Project, conducted in southern Belize, addressed unequal decision-making processes by including community members in the implementation of archaeological excavations at the site of Kaq'ru' Ha' and in planning for the storage of artifacts and dissemination of knowledge to villagers through a heritage center. This paper explores the complex outcomes of altered decision-making; a balanced relationship between archaeologists and Aguacate as a whole may also have reinforced latent inequalities between factions in the village. A critical evaluation of the practice of community archaeology furthers the goal of fostering social change by increasing who has access to archaeological knowledge.

Novotny, Anna (Texas Tech University)

[288] *Cahal Pech Mortuary Practices in Regional Perspective*
In Patricia McAnany's influential work *Living with the Ancestors*, she argued that the practice of venerating ancestors by placing human burials in eastern structures originated with commoners and was appropriated by the ruling elite as potent political displays. Within the Belize Valley, sites at all levels of the settlement continuum had eastern structures that contained numerous human inhumations, suggesting ancestors may have been politically powerful for elites and non-elites. However, ongoing research into ancient Maya mortuary practices shows distinct regional variability in mortuary treatment throughout the lowlands. In this paper, I compare and contrast, first, inhumations from an eastern structure at Cahal Pech, Structure B1, with mortuary practices of the Belize River Valley. Second, I contextualize Belize Valley practices within broader lowland Maya mortuary practices by looking to the middle and upper reaches of the Mopan River Valley. Data are drawn from settlement patterns, individual mortuary contexts, as well as the bodies interred within eastern structures along these rivers. The goal of this paper is to situate ancient Maya mortuary practices of Cahal Pech and the Belize Valley within broader traditions of the eastern Maya lowlands.

Nowak, Jesse (Gilcrease Museum)

[7] *A World of Wrapped Symbols: Bundling and Iconography on Southeastern Ceramics from the Lemley Collection*
Throughout the American southeast, prehistoric and contemporary indigenous groups have conducted ritual acts of wrapping and binding sacred objects in spirit and medicine bundles. Previous researchers have also noted the concept of ritual encapsulation in other cultural expressions such as: settlement design, mound building, pottery, and cosmology. This presentation will focus on the apparent bundling of iconographic motifs and designs present on a ceramic vessel from the Gilcrease Museum in Tulsa, Oklahoma. The presentation of iconography in different stages of bundling on ceramics and its implications on Caddo and Mississippian ideology as well as research potentials of the Gilcrease museum's upcoming online collection database will be explored.

Nowakowski, Joshua [65] see Burke, Chrissina

Nowakowski, Joshua (Northern Arizona University) and Chrissina Burke (Northern Arizona University)

[65] *Extreme Tooth Wear: Understanding Dog Diets in the American Southwest*
Dogs have been described as a refuse management system in prehistoric villages across the world; in fact, much of their domestication has been attributed to their ability to adapt to consume human garbage/waste. Recent research on prehistoric dog burials housed in the Museum of Northern Arizona's curated faunal collections illustrates unusual tooth wear patterns on both the upper and lower carnassials in a large number of the canids. The wear does not appear to represent excessive gnawing on bones, as can be observed in larger predatory animals, nor does it conform to the typical wear associated with age. Instead the tooth wear present on these animals suggests a diet potentially containing corn—presumably from the waste of their human companions. While these canid remains come from sites in different cultural periods and regions, many of their dentition demonstrates similar wear patterns. This poster presents preliminary data and results concerning the tooth wear of these dogs.

Nowell, April (Univ of Victoria-Dept of Anth)

[107] *An Archaeology of the Night*
Archaeologists have been in the dark on the topic of the night for far too long. Like any other aspect of human behavior, the nighttime has firmly planted itself in the archaeological record, ready for us to uncover it, if only we seek it out. Relying upon the material trails that humans leave behind, it is not only possible but productive to pursue an archaeology of the night to enlighten and broaden our knowledge of the human past. Artifacts, features, structures,

and sites provide clues to dark doings, whether these are oil lamps from the Paleolithic, benches upon which the ancient Maya slept, or ancient observatories that humans built for celestial observations. Sex, sin, sleep, slogging, ceremony, and struggles are only some of the nighttime activities that ensued once the sun went down and the moon rose. This paper will introduce the topic of an archaeology of the night and provide cross-cultural examples. All across the globe, humans simultaneously embraced and feared the night.

[248] *Discussant*

[107] *Chair*

Nowell, Sarah [124] see Barnett, Kristen

Nuevo, Amalia [139] see Méndez, César

Nuevo Delaunay, Amalia (Universidad Alberto Hurtado), Juan Bautista Belardi (CONICET-UNPA) and Flavia Carballo Marina (UNPA)

[205] *Tehuelche (Aonikenk) Site Variability during XIXth to XXIst Century in Southern Patagonia (Argentina and Chile)*

Since the arrival of Europeans (XVIth Century) and their related economic activities in Patagonia, the different indigenous societies that inhabited the region were forced to deeply modify their ancient ways of life. The incorporation of new raw materials (glass and stoneware) to produce traditional instruments was one of several of modified aspects that have been archaeologically and historically (chronicles) recorded. We study and compare Tehuelche (Aonikenk) data from XIXth to XXIst century sites in Southern Patagonia, focusing on site structure and artifactual frequencies (mainly glass scrapers), in order to evaluate the variability spectrum of these historic archaeological sites. We analyze sites within Reservations, isolated familiar dwellings and camps, all of which show internal variability also. Differences could be related to demography and mobility as well as to contact contingencies. The resulting archaeological landscape arises as a diverse one, introducing a new scenario for Southern Patagonia in an unequal culture contact frame.

Nugent, Selin (The Ohio State University)

[24] *Funerary Practice and Local Interaction on the Imperial frontier, 1st century AD: a case study in the Serur Valley, Azerbaijan.*

Military campaigns and conflict defined the years leading to the first century A.D. in the South Caucasus. This mountainous frontier region acted as a buffer zone between the Roman and Parthian Empires competing for territorial expansion. Local alliances were cyclically forged, broken, and mended for territorial control. Yet, little archaeological evidence remains of these interactions. How are military campaigns being conducted in the eastern frontier? How are foreign forces interacting with local communities? If foreign military presence and conflict had a long-term presence in this region, it is essential to examine how local populations and armies interacted.

This project examines the case study of an unusual 1st century AD interment that integrates aspects of both Roman and Parthian burial practice and is associated with large-scale feasting events excavated in Naxcivan, Azerbaijan by the Naxcivan Archaeological Project. This project incorporates osteological and isotopic analysis of human remains and a regional approach to funerary practice to examine individual identity, status, and the varied influences in mortuary space construction. By delving into the distinct biography of this interment and its regional mortuary context, this project sheds light on the various aspects of how foreign campaigns influenced and integrated with local identities.

Núñez, Lautaro [139] see Loyola, Rodrigo

Núñez Aparcana, Bryan [283] see Avila Peltroche, Mary Claudia

Núñez Aparcana, Bryan (Universidad Nacional Mayor de San Marcos)

[283] *Nectandra sp. Seed from Archaeological Contexts in Panquima. An Approach Based on Morphological Features and Contextual Information*

One of the main socioeconomic characteristics during the late periods is the high and dynamic presence of exchange of foreign goods, many of them coming from the Amazon basin, including *Nectandra* sp., a seed with psychoactive properties, characteristic of moist woodlands, associated with offerings and funerary contexts in the Andean region.

This study presents the preliminary analysis of *Nectandra* sp., including physical and chemical properties, such as the pharmacological features mentioned in ethnohistoric references, and anticoagulant attributes possibly related to the utilization in ceremonies that involved the use of blood, together with its relation in ritual spaces and other artifacts associated such as *Spondylus* sp. in archaeological contexts at Panquima.

Nyers, Alex [113] see Davis, Loren

Nystrom, Kenneth C. [189] see Zaro, Gregory

Nystrom, Kenneth (State University of New York at New Paltz) and Christina Hodge (Stanford University Archaeology Collections, Stanford)

[215] *Dissection as Social Process: Anatomical Products in the Nineteenth-Century United States*

In the nineteenth-century United States, the number of medical schools increased significantly, which in turn spurred efforts to ensure a steady supply of bodies for gross anatomy courses. Supply was largely derived from marginalized groups such as African Americans and almshouse inmates. Based on available archaeological and skeletal evidence this paper approaches dissection as a multivalent process that transformed participants in radically different ways. For the medical student, the process of cutting into the body was cast as a heroic journey and the triumph of reason over superstition. In this rite of passage, the medical student was the novice, the dissection room the stage, and the body the focus upon which new identity and social bonds were forged. Alternatively, many of the individuals appropriated for dissection were removed from their communities and isolated from process of memorialization. Rather, their bodies were transformed into teaching tools, curated and displayed as specimens, or treated as trash. These material

outcomes underscore both the distance between social personhood and anatomical object and the unease practitioners sometimes felt with the "products" of their work. Remnants of anatomized bodies occupied a shifting materiality between person and thing which further naturalized structural inequalities of race and wealth.

Oas, Sarah (Arizona State University) and Mark Hauser (Northwestern University)

[100] *The Political Ecology of Plantations from the Ground Up*

The domestic economies of households occupied by enslaved laborers are an important domain of analysis for understanding the political ecology and environmental legacy of colonial empires. These households occupy an important intersection of environment, political economy, and culture, and provide an opportunity to exploring both top-down and bottom-up processes of environmental and economic change. This paper presents preliminary research onto households from excavations at Morne Petate in southern Dominica. These findings include botanical remains associated with houses of enslaved laborers and provisioning grounds occupied from the last quarter of the 18th century until the mid-19th century. While results are preliminary and comparison is hampered by the relatively few attempts to archaeologically explore the political ecology of sugar colonies, this research considers to what degree empires shaped these conquered territories, and how these environments could also be mediums for agency, identity, and conflict.

OBrien, Lauren (Southern Methodist University)

[43] *Pithouses in the Taos Valley: What Don't We Know?*

Pithouse occupations in the Northern Rio Grande, specifically the Taos Valley, occurred late in time and at high elevations. There is little evidence of a transitional period from a mobile to sedentary lifeway in this area. Pithouse occupations also occurred during a time when, as little as 30 miles away, multistory pueblo communities were thriving. This change has raised questions and sparked many archaeological investigations over the years. Why do we see this transition from hunter-gatherer to sedentary occupation so late in time in the Northern Rio Grande? Are we in fact seeing a transition from a mobile to a sedentary lifeway or did a new group enter the area? Even as the transition to living in pithouse structures occurred, does the evidence support permanent or seasonal site occupation? This paper will explore these questions by using data gained when multiple pithouse sites were surveyed with ground penetrating radar (GPR). This data, coupled with previous survey and excavation, is being used to create a database of sites across the Taos Valley, thus helping to achieve a more complete understanding of the site occupation, movement across the landscape, and group identity of this time period.

O'Brien, Emily [86] see Manahan, T.

Ochoa, Patricia [254] see Ochoa Castillo, Patricia

Ochoa Castillo, Patricia and Patricia Ochoa (Museo Nacional de Antropología, México)

[254] *Colecciones arqueológicas del Preclásico Mesoamericano en Museos Extranjeros*

La presencia de colecciones mesoamericanas en museos extranjeros forman parte de la historia de la arqueología de México. El coleccionismo entre anticuarios, arqueólogos incipientes, principalmente durante el siglo XIX y las primeras décadas del siglo XX fue una actividad común y legal y muchas de estas colecciones fueron dispersas en distintos museos de Europa y de Estados Unidos. El recuperar estos materiales, en este caso del Preclásico del centro de México, por medio de su registro es una forma de recuperar nuestro patrimonio que de una forma u otra se encuentra fuera de nuestro país.

Odess, Daniel (National Park Service), Julie Esdale (Colorado State University) and Jeffrey Rasic (National Park Service)

[217] *Lessons for the Modern Day: The Archaeological Legacy of J. Louis Giddings*

Louis Giddings began work in northwestern Alaska long before the advent of radiometric dating, at a time when all but the most basic outlines of human history in the region were unknown. Over the course of a relatively brief but remarkably productive career in Arctic Archaeology, he established a basic culture-historical framework for the region that remains largely valid today. He did so by employing the best available sound science—borrowing techniques and principles such as beach-ridge archaeology and dendro-chronology developed by colleagues in other regions and applying them as opportunities presented themselves. Importantly, he was aided in this effort by a recognition that his initial interpretations were founded on very limited data, and that being willing to change his views in light of new information was essential. In the process, he also demonstrated a consistent ability to recognize the relevance of the data he collected to some of the bigger-picture questions of the day. Recent research in northwest Alaska by Giddings' academic descendants has refined and largely corroborated many of his ideas. Giddings may have been interested to see the directions in site dating, raw material analysis, and lithic technology his work inspired.

Odewale, Alicia (University of Tulsa) and Joshua Torres (National Park Service, Rock Creek Park)

[229] *Archaeology in America's Paradise: Renewing Local and National Interests in Our Nations Parks*

The national parks on the island of St. Croix (Christiansted National Historic Site, Salt River Bay Historic Park and Ecological Preserve, and Buck Island Reef National Monument) engage thousands of visitors every year and stand out as some of the most historically and ecologically important sites in the Caribbean region. Cultural resource management projects within these parks have a new focus on community outreach and local youth engagement initiatives. Developing more inclusive programming, aids in the preservation and interpretation of these places that are paramount to the history and identity of the largely African descendant Crucian population. NPS Archaeology is used to engage the community on multiple levels through daily sidewalk talks with park archaeologists, community participation in excavations, providing resource management training, and giving monthly public lectures. Youth engagement initiatives include internship programs, Youth Conservation Corps summer program, Youth Partnerships in Parks, and Earthangle's Humane Inclusion Camp. This shift towards increased inclusion of the local Crucian community has sparked a new level of collaboration between the park service staff and local entities in St. Croix but has also cemented the future of NPS archaeology as a valuable tool for preserving cultural heritage in the Virgin Islands.

ODonnell, Sharlene

[133] *Zooarchaeological Findings and the Importance of Seascape at Weeden Island Archaeological Site (8PI1)*

Many indigenous and non-indigenous communities throughout the world depend on coastal and riverine environments for their livelihood and subsistence.

The seascape is a setting of daily activities, and these communities have a detailed knowledge of their surrounding environment, the tides, and the seasons, all of which influence their decisions for catchment locations of habitat-specific faunal assemblages. For this paper, ethnographic research, zooarchaeology, biological salinity tolerances, GIS mapping, and Tampa Bay seasonal salinity data are used to recognize the importance of seascape for the people inhabiting Weedon Island, Florida during the Safety Harbor period (A.D. 900–A.D. 1725).

O'Donnell, Sharlene [6] see Austin, Robert

Oemig, Alexandria (University of Wisconsin Oshkosh) and Jordan Karsten (University of Wisconsin Oshkosh)

[111] *Troubled Times in Late Prehistoric Wisconsin: Violent Skeletal Trauma Among the Winnebago Phase Oneota*

Offenbecker, Adrienne (University of Calgary)

[275] *Isotopic Evidence for the Presence of Immigrants at Casas Grandes*

Casas Grandes is widely recognized as having cultural characteristics of both Mesoamerica and the American Southwest. Although the presence of objects and ideas from surrounding areas clearly demonstrates some degree of regional interaction, the nature and extent of Casas Grandes' relationship with neighbouring communities is largely unresolved. In particular, one of the key issues in Chihuahuan archaeology is whether Medio period complexity arose from internal developments or external stimuli, such as an influx of people from surrounding regions. In this study, we address this question by using strontium isotope analysis to determine the geographic origins of a subset of the individuals interred at Paquimé, the Convento site, and several sites from the southern zone of the Chihuahuan culture area. Our results suggest that over twenty percent of the individuals sampled (N=83) were immigrants to Paquimé, while over 30 percent of the Viejo period individuals sampled (N=13) were classified as non-local. These findings are interpreted in relation to demographic variables and mortuary treatment to evaluate various scenarios for the presence of immigrants at the site, including post-marital residence, trade, pilgrimage, warfare, and captive taking.

[275] *Chair*

Ogburn, Dennis (University of North Carolina at Charlotte)

[172] *Unraveling the Relationship between Color and Meaning of Cords in Matching and Related Inka Khipu*

Colors of cords in Inka khipu are of great interest because it has long been understood that they were meant to convey specific meanings, namely indicating the individual category being encoded in a particular position on a khipu. Colonial authors such as Calancha and Garcilaso de la Vega made claims regarding what certain colors symbolized, but studies of extant khipu have yet to definitively correlate colors with specific meanings. Before we can begin to understand the correlation between color and meaning, we need to assess to what extent color choices were standardized within and between the different levels at which khipu were created and used within the empire. Here I discuss observations regarding the level of standardization of colors within individual khipu, between those in matching sets, and between related khipu comprising an accounting hierarchy; these observations are derived from my analysis of data tables for two large matching khipu from Coastal Peru and for a set of three khipu from Ica that make up an accounting hierarchy. Results suggest that, at least for these khipu, color choice was consistent in some cases but variable in many others, and that pendant position was perhaps most important for conveying meaning.

O'Hara, John (NYU)

[278] *Social Networks and Cultural Geographies in the Magdalenian: evidence from personal ornaments*

The Magdalenian comprises one of the richest and most complex archaeological records known to archaeology, with extensive social networks stretching across the landscape. Large quantities of 'exotic' goods, such as objects in stone, mineral, or shell found hundreds of kilometers from the material source, attest to the wide-ranging mobility of these groups. On occasion, however, the distances are so great that archaeologists attribute them to complex networks of interaction, procurement and exchange between separate groups spread across the landscape. This paper details an attempt to further our understanding of these social geographies through analysis of personal ornaments.

Typological and technological aspects of the ornament record from Franco-Cantabria will be interrogated for insights into the nature, extent and organization of social networks, such as the degree of regionalism within the study region and whether that changes, and the geographic axes of cultural and material diffusion across the landscape. Additionally, a geochemical analysis of strontium and oxygen stable isotopes from a number of perforated animal teeth will further our understanding of both the mobility of these groups, and the patterns of ornament exchange across the Magdalenian social landscape.

Oka, Rahul (University of Notre Dame)

[4] *The Inclusion of Ethnographic Data And Controlling for Political Bias Leads to Robust Modeling in Archaeology*

There have been multiple advances in recent approaches to modeling within archaeology. The power of advanced computational techniques including agent-based modeling, Bayesian approaches, etc., have enabled archaeologists to hypothesize and describe complex multi-scalar processes affecting past societies, while paying heed to multiplicity of variable factors. However, while anthropological archaeologists reject models within economics and political science as "data-poor," recent archaeological modeling also stands accused of similar neglect and increasing reliance on assumptions of past behaviors, that are often driven by the social and political training of the modelers. These can affect both the selection of necessary/sufficient data and variables, and the assumptions made regarding the relationships between variables. I suggest that the careful inclusion of ethnographic data while controlling for political and social bias confers robustness to modeling approaches. To showcase this, I combine ethnographic and archaeological data, network dynamics, and engineering models to describe and test the evolution of trading behaviors, as traders respond to changing social and political regulation. Cross-cultural ethnographic data on traders (n=576) and archaeological data from Asian and African port-cities is used to model and test global trade interactions in the Indian Ocean, ca. 1000–1900 C.E.

Oka, Rahul [171] see Ames, Nicholas

Olesch, Dana (Beloit College) and Dr. Kylie Quave (Beloit College)

[204] *Camelid Designs and Community Dynamics in the Late Intermediate Period Andes (ca. A.D. 1000–1400)*

Although domesticated camelids seem to be an important element of the prehispanic Andean economy and social structures, they appear inconsistently in the iconography of ceramics, textiles, lithics, and other media. Recent archaeological excavations at the site of Yunkaray, Maras, Peru revealed a high frequency of local style ceramics with camelid iconography. Found in domestic areas associated with high status individuals, these ceramics were possibly used for feasting and as an avenue of demonstrating personal wealth during the Late Intermediate Period (LIP, ca A.D. 1000–1400). While the presence of camelid iconography on Yunkaray pottery is unsurprising based on evidence for the importance of agropastoral activity within the Maras region, the question remains as to why only certain areas incorporated camelid imagery and why it occurred during the LIP and not prior. Through this poster presentation, we explore the distribution of camelid iconography in the Cuzco region and in the broader Andean region, both temporally and geographically, in relation to the types of vessels on which this iconography appears. We argue that in Cuzco, this iconography functioned to define identities that differentiated regional communities from the emerging Inka Empire.

Olguin, Laura (Universidad Católica del Norte), Carola Flores (Universidad de California, Santa Barbara), Sandra Rebolledo (Universidad de Chile) and Diego Salazar (Universidad de Chile)

[76] *Date and Context of Early Mussel Shell Fishhooks (Choromytilus chorus) from the Southern Coast of the Atacama Desert, Taltal, Chile.*

Fishing tools made on marine shells are an important aspect in the economy of prehistoric fishing groups around the world. The oldest shell fishhook along the Pacific Coast of the American Continent dates around 10,000 years B.P. and comes from Baja California, Mexico. On the northern coast of Chile, fishhooks on mussel shell (*Choromytilus chorus*) have been recovered from the archaeological site of Morro Colorado with dates between 8500 and 6500 cal B.P. The appearance of this technology marks the transition from coastal to maritime economies along the coast of the Atacama Desert. In this paper we will present contextual data of the mussel shell fishhooks from Morro Colorado and compare this evidence with other early fishing technologies along the Pacific coast.

[76] *Chair*

Olguín, Laura [139] see Flores-Fernandez, Carola

Olivera, Paola [14] see Carvajal Contreras, Diana

Olsen, Sandra

[175] *Sacred Spaces vs. Public "Billboards" in Saudi Arabian Rock Art Placement*

Saudi Arabia has a rich cultural heritage that is amply represented in the extensive rock art from north to south along the western half of the Arabian Peninsula. Two petroglyph localities, Jubba and Shuwaymis, were just awarded UNESCO World Heritage status. Representing a wide temporal range and diverse styles, it is clear that the art is concentrated adjacent to ancient lakes, along wadis, and around other sources of ephemeral pools of rainwater. This study examines the distribution of the petroglyphs and contrasts hidden alcoves and places with difficult access and low visibility with large cliff faces in the open at Jubba, Shuwaymis, and a southern region known as Bi'r Hima. The time periods and species represented on major panels at these localities will be compared to resolve whether or not some knowledge was restricted to select members of nomadic communities.

Olson, Kyle (University of Pennsylvania)

[228] *The Political Economy of Qalas and Canals in Greater Khorasan*

Neo-evolutionary models for the emergence of early complex polities propose a causal relationship between political centralization and the development of large-scale irrigation networks. Decades of field research and historical analysis have made available a large dataset of settlement patterns and irrigation networks in lowland Central Asia, but information regarding settlement and agriculture in the highlands of Central Asia during this time is less well understood. The relationship between settlement distributions and irrigation networks can be studied at a coarse resolution using Google Earth. Systematic documentation of a single river valley (Esfarayen) in Northern Khorasan demonstrates that there is a correlation between the size of fortified sites and their location relative to the irrigation network. The largest sites are consistently located nearest to the sources of irrigation waters and presumably controlled the downstream distribution of this water. This finding suggests that the khanate model proposed by Hiebert and Lamberg-Karlovsky may fit the patterns observed, there is little evidence to support the purported connection between the development of complex irrigation systems and centralized states in the study area until the Sasanian period at the earliest (224–651 C.E.).

OMansky, Matt (Youngstown State University) and Thomas Delvaux (Youngstown State University)

[156] *Excavations at the Fresh Lake site (SS-7), San Salvador Island, Bahamas*

More than three dozen prehistoric sites exist on San Salvador Island, Bahamas. These consist of small settlements and work areas of the indigenous Lucayans. One of these sites, the Fresh Lake site (SS-7), has been the focus of research by Youngstown State University archaeologists each December since 2012. No clear signs of habitation have yet been found, although over 100 shell beads, along with pottery, shell tools, and shells and fish bones, have been recovered. In this paper, the nature of the site and its material record are discussed and related to previous research conducted elsewhere on the island, particularly the nearby Storr's Lake site (SS-4).

Omura, Sachihiro [75] see MacIntosh, Sarah

ONeil, Megan (Associate Curator, Art of the Ancient Americas, LACMA)

[121] *Insights into Maya Ceramic Techniques with Digital X-Radiography*

Based on ethnographic comparisons and the study of ceramic materials, art historians and archaeologists have long inferred techniques of Classic Maya ceramic production, such as the use of coils, slabs, and molds. This paper will review new analytical tools for imaging Maya vessels and what they reveal about ancient ceramic production techniques. Digital x-radiography is one tool in a suite of other non-invasive techniques that are being used to study a group of ceramic vessels in LACMA's permanent collection. The interpretations of the radiographs are made in conjunction with physical examination of the vessels as well as other ceramics. Assumptions about how Maya vessels were built, including the use of handbuilding and wheel techniques, can now be confirmed or refuted through digital x-radiography of vessels. Furthermore, the interpretation of radiographs in a digital format allows for vessels to be

grouped according to the degree of manipulation of clay bodies. This research is one part of the Maya Vase Research Project, an interdisciplinary collaboration between curatorial and conservation departments. The implementation of these analytical tools both creates more context for these objects in the LACMA collection and can in turn be used on excavated objects for further comparison and study.

[47] *Discussant*

Oota, Hiroki [147] see Karsten, Jordan

Opitz, Rachel

[261] *A Matter of Priorities: Making a Future for Digital Scan Data*

There are no real technical barriers to preserving scan data, nor are there any serious obstacles to making it broadly available now. The problems are purely about resources. The resource required is skilled personnel, and a certain amount of infrastructure. If this really is, as I claim, a problem about resources, then it can be resolved if we decide, as a community, to make the preservation and accessibility of our digital data a priority. And there, for many archaeologists, is the rub. Given the choice between excavating a new site, conducting a new survey, or conserving a physical artifact, and preserving a digital artifact, the potential gain from excavation and survey or the epistemic superiority of the physical object will win out almost every time. For all the arguments that digital scan data can be a virtual surrogate, and all the proponents of the study of archival material, if we look at where we put our resources, we clearly aren't buying it. If we truly wish for preservation of digital scan data to be a priority, and to invest in resources necessary to facilitate access to it for research, our challenge is to elevate its value in the archaeological discourse.

[33] *Moderator*

Orbegoso, Clorinda [219] see Baca Marroquin, Ancira Emily

Ore Menendez, Gabriela (Vanderbilt University)

[204] *Multiscale Geospatial Image Analysis of Agricultural Landscapes and architecture in Highland Peru*

Large scale survey of anthropogenic landscapes using traditional methods requires considerable fieldwork time and effort. Diverse air- and space-borne imagery enables registry of key data prior to the execution of field research. We present a multiscale imagery-based survey methodology to optimize limited research resources and to broaden the scale of archaeological landscape research. This broader approach enables identification and mapping of agricultural terraces, canals, and architectural features from the Lurin valley of the central Peruvian highlands. The identification of features enable definition of the extent of agricultural infrastructure and how it changed over time. Of interest in this case study are the effects of compulsory urbanism during the Spanish colonial era, towns as a large proportion of the population was resettled from more dispersed settlements to compact planned colonial towns. By using a feature extraction routine using declassified Corona satellite imagery and high-resolution panchromatic aerial photography, we identify and extract features of the agricultural landscape in the area. The integrated multiscale approach enables identification of more cultural features over a larger area than traditional methods, and provide more accurate preliminary data for fieldwork.

Orland, Ian [176] see Beasley, Melanie

Orozco, Joseph (CSULA), Michael D. Glascock, Ph.D (University of Missouri) and Cinthia Campos (California State University, Los Angeles)

[93] *Ritualized Shatter: Obsidian in a Ritual Context at La Milpa, Belize*

During the 2014 and 2015 field seasons, the California State University, Los Angeles Sacred Landscapes Archaeological Project conducted an investigation of a collapsed chultun at the ancient Maya site of La Milpa. The collapse pit had a small grotto at the northern end and excavation uncovered a plaster and rubble cored platform enclosing the feature. The platform formalized the space and suggested that it had functioned as a sacred landmark. During the excavations, a fairly dense concentration of sherds was encountered along with four dozen obsidian prismatic blades. The recovery of the blades is not surprising in that obsidian blades have been reported from other sacred landmarks in the Maya area such as caves. What is unusual, however, is the extremely fragmented condition of the blades which suggests deliberate breakage. Analysis of fracture patterns and use-wear has been conducted to determine how the blades had been used and fragmented before being deposited in the hole. Obsidian blade fragments from this site have been sourced to two Guatemalan highland quarries.

Orr, Caley [278] see Meyer, Dominique

Orschiedt, Jörg [52] see Schulting, Rick

Orsini, Stephanie, Carolyn Freiwald (University of Mississippi) and Keith Prufer (University of New Mexico)

[270] *Changing Food Choices from Paleoindian to Classic Maya Periods: A Zooarchaeological Analysis*

Very little is known about Paleoindian and Archaic subsistence strategies of the people of Mesoamerica prior to the development of ceramics as food processing, storage, and serving containers. Rockshelters with good preservation and stratigraphic deposits can provide excellent contexts for a comparative faunal analysis through time. We examine subsistence patterns using the faunal remains from the Maya Hak Cab Pek (MHCP) rock shelter in the Toledo District of southern Belize before and after the introduction of ceramics. Use of the rockshelter spanned the Paleoindian to the Classic Maya periods. Preservation of the faunal remains at MHCP is unusually good and allows for a detailed analysis of early diet and animal processing. With over thirty species identified in the faunal assemblage, we determine the potential effects that the introduction of ceramics had on the use of specific species and elements of those species.

ortega, victor [78] see Gallaga, Emiliano

Ortega Cabrera, Verónica [129] see Sugiyama, Nawa

Ortiz, Veronica (Verónica Ortiz) and Thomas Lynch (Director Emeritus, Brazos Valley Museum of Natural)

[62] *Quishqui Punku (Pan 3-170), Early Use of High Altitude Sites in the Callejon de Huaylas (Ancash), Peru*

In 1964 excavations at Quishqui Punku, Lynch described a diverse lithic industry, including small blades and elongated flakes, which I re-analyzed in 2014–15. Lynch did not take samples for radiocarbon dating because of severe mixing and contamination by later agriculturalists. Nevertheless, in this study of the blades and debitage, I recognized two fragments of Fishtail points. Typological considerations suggest occupation from the Terminal Pleistocene through the Early and Middle Holocene (Younger Dryas). Fishtail points on flakes and microblades span a broad time spectrum in South America: Fishtail points occur in Fell's Cave, El Inga, and Río Negro, while microblade technology was found at Cueva de los Toldos, El Inga and Manachaque. Lynch identified 94,660 pieces of worked stone, including 1782 artifacts in 66 types. He found these and additional types at 31 other sites in the Callejon, such as Guitarrero Cave and Pan12-58 near the headwaters of the Santa River. Lynch based his typology largely on shapes and dimensions, paying little attention to technological factors. My methodology stressed technology and sought to reconstruct the processes of production of artifacts through an analysis of human intention, techno-typological determination, and the "operational chain."

Ortiz Brito, Alberto (UNAM)

[136] *La relación ser humano-paisaje dentro de los grupos olmecas del periodo Preclásico mesoamericano*

Mucho antes de que el término Mesoamérica fuera acuñado para definir un área cultural particular, diversos arqueólogos ya se habían percatado de la amplia dispersión espaciotemporal de un gran número de manifestaciones plásticas correspondientes a un mismo estilo del periodo Preclásico al cual denominaron olmeca. Si bien es un hecho innegable que el estilo olmeca fue adoptado por muchos grupos humanos asentados en las diversas regiones de Mesoamérica, aún persiste la interrogante de qué tan homogéneos eran estos grupos en el ámbito religioso, político y social.

Así pues, la presente ponencia tiene como objetivo discutir la homogeneidad cultural de los grupos humanos partícipes del fenómeno olmeca a través del análisis de seis rasgos fisiográficos en los cuales la presencia de manifestaciones plásticas dan cuenta de la estrecha relación entre el humano y el paisaje, estos son: el cerro Manatí, Arroyo Pesquero y el Volcán San Martín Pajapan, Veracruz; el cerro Chalcatzingo, Morelos; y las cuevas de Oxtotitlán y de Juxtlahuaca, Guerrero. Dentro de los estudios olmecas el análisis de la relación humano-paisaje es un tema que requiere mayor atención y debe ser abordado desde corrientes teórico-metodológicas adecuadas, en este caso se utilizarán propuestas provenientes de la arqueología del paisaje.

Ortiz-Aguilu, Juan-Jose

[258] *The Caribbean and the Beginnings of American Archaeology and Anthropology*

Both American and native Caribbean scholars and amateurs of different capacities and experience contributed to the formation of the discipline of Archaeology in the region, especially in Puerto Rico and Cuba. Before 1920 came around, these islands had seen the likes of John Wesley Powell, William H. Holmes, Jesse Walter Fewkes, John Alden Mason and none other than Franz Boas himself. The interesting thing is that these people not only did what they did, but that the Caribbean, its data and the information provided by the local amateurs and scholars, contributed considerably to the formation of these legendary figures and their eventual contribution to the discipline. Venturing into the Caribbean at this time was definitely due to the results of the Spanish-American War of 1898 and the acquisition of Puerto Rico as war booty, the total control of Cuba (for a while) and geopolitical domination of the whole region by the U.S. It has been a very little known chapter in the history of American Anthropology and Archaeology.

Ortiz-Aguilú, Juan [160] see Martinez-Cruzado, Juan

Ortman, Scott [17] see White, Devin

Ortmann, Anthony [132] see Kidder, Tristram

Osborn, Jo (University of Michigan) and Benjamin Nigra (UCLA)

[205] *Feasting and Ritual Reuse: Analysis of the Faunal Assemblage from Huaca Soto, Chíncha, Peru*

Huaca Soto, a monumental Paracas platform mound in the Chíncha Valley, experienced centuries of post-Formative reuse that continued well into the Inca Period. Two seasons of extensive excavation have yielded a massive assemblage of feasting debris within the mound's uppermost sunken court dating to the mid-first millennium CE. Communal feasting in the ancient Andes is widely acknowledged to have been both a ritually and politically charged practice, and ongoing research examining the ritual reuse of Huaca Soto includes zooarchaeological analyses of feasting remains. This faunal assemblage highlights the array of activities that may have been incorporated into feasting events, and provides evidence of animal sacrifice, divination, and food consumption. These behaviors at Huaca Soto are consistent with ethnographic and ethnohistoric data in the region, and highlight the complex practice of ritual reuse of mounds on Peru's South Coast.

O'Shea, John (University of Michigan)

[249] *Moderator*

O'Shea, John [55] see Lemke, Ashley

Osoorio, Daniela (University College London), Calogero Santoro (Universidad de Tarapacá), Marcela Sepúlveda (Universidad de Tarapacá), José Capriles (Universidad de Tarapacá) and Paula Ugalde (Universidad de Tarapacá)

[62] *Early Occupation of the Altiplano of Northern Chile: Activities, Technology, and Mobility*

The problem of how and when the Andean highland ($\geq 3,400$ m above sea level) west of the Atacama Desert was colonized by humans has recently been the subject of extensive interdisciplinary research. New information challenges traditional interpretations that occupation of this extreme environment

started relatively late in the process of peopling South America. Based on archaeological and paleoecological data from various sites in northern Chile, we propose that the Altiplano, a mega-ecological patch, was occupied during the Pleistocene-Holocene transition (ca. 12,000 cal year B.P.) by mobile hunter-gatherers. We describe the lithic technology, faunal remains, and other archaeological materials, such as pigments and ornaments (bone and shell beads), present at the sites. We argue that mobility within this highland environment was logistically organized, and that early people curated their lithic tools, as evidenced in diagnostic projectile points and other stone tools.

Osorio, Daniela [139] see Capriles, Jose

Ostapkowicz, Joanna

[290] *'Totem' Owls, Otters and Pelicans: 14C Dating Central Florida's Prehistoric Sculptures*

Florida's wealth of prehistoric wood sculpture includes three large zoomorphic 'totems' dredged in the 1950s and 1970s from the banks of Hontoon Island, along the St Johns River, and a stylistically unusual anthropomorphic figure from the Tomoka River. Some, like the Hontoon owl, have had a long history of museum conservation, display and interpretation. These central Florida sculptures form a unique corpus that can inform on the diversity of artistic expression within a region long dominated by the remarkable wood carvings from the southern sites of Key Marco and Fort Center. Our new study aims to establish their chronologies through AMS 14C dating and to investigate their provenance through strontium isotope analysis, in order to consider how the carvings relate to one another, and more broadly, to determine their position within the wider Floridian context. The paper will provide an overview of some of the recent directions in their study, including historiography, iconography, chronologies and material studies (wood identification and strontium isotope analysis).

[290] *Chair*

Ostenholtz, Anna [215] see Martin, Debra

Oster, Jessica [205] see Tung, Tiffany

Osterholtz, Amber (University of Nevada, Las Vegas) and Christopher Schmidt (University of Indianapolis)

[52] *Heads that Speak: Dividuals and Trophies from the Eastern Woodlands Archaic*

The removal of human body parts after death is a diverse practice with many cross-cultural nuances. Trophy taking is just one means of body part removal. Among the hunter-gatherers of the late Middle and Late Archaic (6,500–2,600 B.P.) of the U.S. Eastern Woodlands, heads were common trophies, though any body part could be taken. A survey of over 20 sites shows that post-cranial trophies were often handled and kept for long periods of time. Trophy heads however, were utilized for a short time before being disposed of, often as grave goods. While related to warfare practices during the Archaic Period, trophy taking is infrequent and not every individual killed was a trophy victim. This suggests that the taking of trophy heads in the Archaic Period is more particular than victims of warfare. The power and meaning of trophy heads are examined from a position that incorporates the partible body and notions of dividuality, which underscore the ways trophies retain the identity of the individual to whom they belonged. Thinking about trophies in this way contextualizes the meanings that trophies may have had during the Archaic Period and the ways they were used to traverse group and individual identity.

Osterholtz, Anna J. [24] see Bethard, Jonathan

Osterholtz, Anna (University of Nevada Las Vegas), Virginia Lucas (University of Nevada Las Vegas), Andre Gonciar (Archaeotek Canada) and Angelica Balos (Ministry of Culture - Hinedoara County, Romania)

[24] *Mortuary Practices in the First Iron Age Romanian Frontier: the commingled assemblages of the Magura Uroiului*

Frontiers are fuzzy spaces, allowing for cultural diffusion and the negotiation of cultural identities. Identity is defined both based on interaction and on exclusion of surrounding groups. Located at the confluence of the Mures and Strei Valleys, the Magura Urioului rock formation stands as a natural fortress dominating the built and natural landscape. The highly visible rock outcropping and surrounding terraces have been continuously used by various groups including the Hallstatt, Celtic and Late Iron Age Dacians as fortified settlements. It would have served as a very visible focus for both economic and ritual performance. The focus of this presentation is the First Iron Age funerary monument located at the base of the rock face. Multiple types of human mortuary processing (both primary and secondary burials are present) as well as animal sacrifice and feasting activities are visible, suggesting increasing stratification and differential burial based on gender and age categories. Only adult females and children were found in the monument, suggesting a very complicated mortuary program likely reflecting rapid social hierarchy formation at a time when proximity to newly utilized metals such as copper, iron, tin, gold, and coal would have significantly changed society and social interaction.

[215] *Chair*

OSullivan, Rebecca

[260] *Archaeology in your Backyard: Successes and Lessons Learned from FPAN-Led Community Archaeology Projects*

Over the past 10 years, staff from the Florida Public Archaeology Network (FPAN) have developed curricula, programs, and trainings that educate both the general public and land managers about archaeology and Florida's unique past. While many of these initiatives might take place in a classroom or lecture hall, FPAN archaeologists also get out in the field to organize community archaeology projects that engage the public with the discovery of their own pasts. This presentation will highlight some of the successful strategies employed for these community based archaeology programs, as well as some of the challenges of this type of work outside of a traditional academic setting. Participatory mapping, oral history work, and public archaeology days have been useful in listening to and learning from the public about their local histories, but what happens when memories clash with archaeological interpretation? How can "public archaeologists" bridge the gap while also respecting the layered and ever changing histories that communities are constantly building and changing?

Oswald, Dana (Prescott College)

[258] *Creating Insiders and Outsiders through Language*

Anthropologists use discourse analyses to study how language is used within cultures and across cultural boundaries as a way to distinguish between the cultural "insiders" and "outsiders." This study investigates how language creates insiders and outsiders in archaeology. Textbooks and primary literature are used in the professionalization of students from undergraduate through doctoral programs, helping to drive the transition from novice to professional status in archaeology. Scholars within the academy create theory and associated terminology within paradigms that is passed down to their students, a cultural subgroup, and is disseminated throughout the professional literature. Language differences among avocational, applied and theoretical archaeology are demonstrated through the analysis of how they discuss the data sets, such as artifacts, settlements and regional patterns, that are common to all these groups. Newsletters, site reports, journal articles, public talks and conference papers are used in this analysis.

Otaola, Clara [204] see Neme, Gustavo

Otaola, Clara (IMHICIHU-CONICET), Fernando F. Franchetti (Department of Anthropology, University of Pittsburgh) and Miguel A. Giardina (IANIGLA-CONICET Grupo Vinculado San Rafael)
[207]

Distributional studies in the Diamante Valley, Mendoza, Argentina: a methodological approach.

We present a random sampling design for the Diamante Valley, Mendoza, Argentina. We selected 3 areas located in the highlands, the piedmont and the lowlands. The aim is to test differences and variability in the use of the space. Each of the areas is constituted by 100 Km² and was divided by GIS in 10,000 sampling units of 10,000 m². 122 units have been selected randomly in each of the areas. From data available of neighboring areas we generated expectations of material densities and archaeological sites. In this first stage, we show the results of 30 percent coverage in the piedmont and the lowlands units. Finally, we compare these results with lineal transects done in the piedmont.

Otarola-Castillo, Erik [115] see Burnett, Paul

Otárola-Castillo, Erik [134] see Valentine, Benjamin

Otárola-Castillo, Erik (Harvard University), Max Price (Harvard University) and Jesse Wolfhagen (Stony Brook University)
[176]

Zooarch, A Statistical Package for Zooarchaeologists

Zooarchaeologists address some of today's "big-questions" related to human evolution, social competition and exploitation, big-game hunting, and the origins of domestication. These questions are frequently answered by systematically observing the appropriate zooarchaeological assemblages and quantifying and analyzing suitable data. Techniques used throughout data collection and analysis include sampling, frequency distributions of bone counts, butchery marks, taphonomic modification, and GIS analysis. Many of these techniques require sophisticated statistical tools. However, there is currently no software package available across all computer platforms designed to deal with analyses specific to zooarchaeological problems. Here, we present "zooaRch," a statistical package within the R computing environment, which provides a means for flexibly integrating a broad range of analyses to conform to project-specific goals. Functions in zooaRch allow users to import, manipulate, visualize, and analyze zooarchaeological data. Moreover, zooaRch is open source, freely distributed, customizable, and its graphical user interface is easy to use within the R computing environment. We provide analytical examples using survivorship and mortality analyses, skeletal part-frequency analyses and simulations, and taxa ratio analysis.

Otero, Clarisa [259] see Cremonte, Maria

Ots, María José [91] see Sugrañes, Nuria

Outram, Alan (University of Exeter)

[176] *Integrating Lipid Residue Analysis into Zooarchaeological Research*

This paper considers the use of lipid residue analyses as an integral part of zooarchaeological research. It critically assesses the different types of information that can be gained from the study of both animal bones and lipid residues. It is not the intention to provide detailed consideration of the methods of lipid residue analysis, but instead to concentrate on zooarchaeological interpretation, drawing out, from examples, the different methodologies' strengths and weaknesses in relation to a variety of questions. Key issues discussed with respect to both methods include identification, reference material, inherent biases, taphonomy, quantification of the economic and cultural significance, association with material culture and context, dating, and environmental reconstruction.

Overholtzer, Lisa (McGill University)

[75] *Producing an Empire: Household Production and Market Expansion at Postclassic and Colonial Xaltocan, Mexico*

Archaeologists have long been interested in household production and consumption, regional economic interactions, and the development and expansion of trade networks, particularly with the rise of states and empires. This research, however, has often focused on top-down political-economic processes in which state-level elite actors condition economic activity. Put simply, "states"—and by extension, their leaders—intensify household craft production, facilitate exchange, and redirect the flow of goods. In contrast, my research reframes our understandings of macro-level economic processes to include the daily material practices of ordinary smallholders and the social relationships that drive production and exchange. In this paper, I take a precise, diachronic approach to variation at the micro-level, examining how members of one commoner household at the central Mexican site of Xaltocan altered their production strategies over four centuries, spanning the pre-Aztec, Aztec, and early colonial periods. Among the key findings is that many of the shifts in material culture previously assumed to have been the result of the Aztec conquest—a narrowed focus on cotton textile production, for example—actually pre-date the empire significantly and thus reflect anticipatory strategies of commoner agents. Assessing the effects of such strategies remains a challenging, but I argue crucial, endeavor.

Owen, Steve [267] see Brown, Erin

Owens, Sheena [63] see Thompson, Katlynn

Ownby, Mary [66] see Van Keuren, Scott

Oyola-Coeur, Monica [253] see Beiter, Gary

Oyola-Coeur, RPA, Monica (National Archives)

[253] *The National Archives: Accessing Historical Resources for the Archaeologist*

The National Archives is best known as a repository of the Charters of Freedom and less known for the wealth of historical resources from the vaults, many accessible digitally. This paper discusses how U.S. government records of historical value such as documents, maps and early photographs are organized to facilitate search of archival resources available for archaeological research. An overview of the National Archives collections, databases, and digital information from selected federal agencies records is presented to assist the cultural heritage preservation professional as well as the scholar researcher on preliminary ethno-historical or historical archaeology investigation.

Oyuela-Caycedo, Augusto

[263] *Where was the Forest in the Upper and Norwest Amazon before the Arrival of the Europeans?*

This paper presents evidence that suggests a very different environment than the observed landscape tropical forest of today. A comparison of two regions, the white waters system of the upper Amazon river (region of Iquitos, Peru) and the black water system of the Mesay river drainage (Chiribiquete National Park, Colombia), illustrates the strong possibility that these areas were grasslands in the past. This is considered to be a byproduct of (consider using anthropogenic activities) human action between at least 500 B.C. to the European conquest in the case of the upper amazon and the commission of frontier limitation of Spanish and Portuguese territory in the case of the Mesay. These results are based on archaeological surveys, excavations, and GIS projections conducted over the last 20 years. The conclusion from this work questions the biological and ecological assumption of the temporal distribution of the tropical forest in Amazonia, proposing a model that accounts for the expansion of the forest to the present distribution.

Ozán, Ivana Laura [139] see Méndez, César

Ozorio De Almeida, Fernando (Universidade Federal de Sergipe), Brenda Bowser (California State University, Fullerton) and Sachiko Sakai (California State University, Long Beach)

[292] *Applying OSL Dating to Understand Relationships between the Teotônio Site and Surrounding Populations, Southwestern Amazonia*

This study provides an example of the potential for optically stimulated luminescence (OSL) dating to resolve chronological questions that cannot be adequately addressed using conventional radiocarbon dating alone. We have applied this method to ceramics from the Teotônio site, located beside the Teotônio waterfall on the upper Madeira River in southwestern Amazonia. This site can be understood as a persistent place, with several occupations ranging from at least 6000 B.P. to recent times, when the Teotônio village, inhabited by caboclo populations, was flooded by construction of a dam. Occupations by ceramic producers date back to 3000 B.P. and are related to at least three different ceramic traditions. Teotônio may have been a regional center during the Jamari period; differences in ceramics suggest the presence of material from neighboring sites, but some associations may be due to stratigraphic mixing. Using OSL to directly date ceramics from the Teotônio site, our aim is two-fold: first, assign a chronology to the still undated occupation by producers of ceramics related to the Jamari style, predominant in the thickest layer of the site, and, second, establish the chronological relations between this style and what seems to be material coming from the surrounding sites.

Pacheco, Aryel [76] see Retamal, Rodrigo

Pacheco-Fores, Sofia (Arizona State University) and Christopher Morehart (Arizona State University)

[236] *Identity, ritual, and violence in the Epiclassic Basin of Mexico*

The practice of human sacrifice has a remarkable time depth within Mesoamerica. However, it is often misunderstood as a social practice. In this project, I investigate an Epiclassic (600–900 C.E.) shrine site in the northern Basin of Mexico, where over 150 male, human crania showing evidence of decapitation were unearthed. The Epiclassic period in the Basin of Mexico was a period of political fragmentation, migration, and warfare. I explore the identities of the individuals using a combination of archaeological, biological, and ethnohistoric data in order to understand the social practices embedded within their deposition. Using intra-cemetery biodistance analysis, I assess if kinship-based identities affected how particular individuals were targeted and, ultimately, deposited as victims of ritual violence.

Packard, Ashley

[268] *It's a Slippery Slope: The Impacts of Erosion on the Spatial Distribution of Artifacts*

This project looks at the spatial distribution of lithic and ceramic artifacts on slopes in Petrified Forest National Park to examine erosional impacts on distribution. Archaeologists use the spatial distribution of artifacts to identify features and their functions. Therefore, it is important that the affect of erosion moving artifacts out of their primary contexts is understood. It is hypothesized that patterns exist in the way artifacts erode downslope. Transects are put across site slopes and the size and weight of artifacts is measured. Statistical methods are used to look at variation in the size and weight of artifacts moving downslope. The utility of the results would be a measure to evaluate the degree to which a site has eroded. This research is applicable to the greater Southwest because it can be used to distinguish between natural and cultural patterns in the spatial distribution of artifacts to better interpret ideas about human behavior.

Padilla, Eliseo [230] see Schmidt, Paul

Padilla Gutiérrez, Eliseo [230] see von Nagy, Christopher

Pagan-Jimenez, Jaime [220] see Pagan-Jimenez, Jaime R.

Pagan-Jimenez, Jaime R. (Faculty of Archaeology, Leiden University, Nederland) and Jaime Pagan-Jimenez (Leiden University)

[220] *On the Way to the Islands: The Role of Early Domestic Plants in the Initial Peopling of the Antilles*

Indigenous people initiated their dispersal toward the Caribbean isles at sometime around 8,000 to 7,800 years before present. This time framework coincides with the consolidation/aggregation and eventual transference of new dietary suites (domestic plants) to long distances, having been this process one that initiated at least in two different and mutually distant regions of continental America. This presentation explores the feasibility of the ideal free distribution (IFD) and diet breadth (DB) models for interpreting early human dispersal towards the isles and between them. Although the causes that triggered the initial peopling of the isles are poorly understood, some outcomes of these early processes, such as the acquisition and factual use of domestic plants in island locales, have been consistently registered. Together with the IFD-DB models we also explore other theoretical constructs derived from archaeology, experiential philosophy, and phenomenology (e.g., transported landscape, experiential space, biography of things) aiming at weigh up if domestic plants could have been a primum mobile around the initial peopling of the Caribbean islands.

Pagán-Jiménez, Jaime [223] see Field, Michael

Pageau, Hanna Marie (University at Albany)

[71] *Archaeology and Experiential Learning: The Unique Impact of Learning Experientially for the Field Sciences*

This paper is an education and curriculum development perspective on hands-on research, including the process of evaluation of learning outcomes. Field Schools are an integral part of education in the field sciences, and particularly in archaeology where field identification of artifacts and features is not reproducible in other contexts. Field schools in general are targeted toward advanced undergraduate students, those already in graduate school, and students able to pay thousands of dollars to attend. This paper will discuss the need for research about the long term educational effects of field participation as a venue for training and assessment. The goal is to better understand the impact of the experiential learning process to help provide incentives and data for educators, both in and outside of archaeology, to begin getting students involved in hands-on research at earlier career stages.

Pai, Mahealani [227] see Rossen, Jack

Paige, Jonathan (ASU, School of Human Evolution and Social Change)

[67] *Cultural Transmission and Lithic Technologies, a Case Study in the Late Prehistoric Tonto Basin*

The past 5 years have seen new lithic studies inferring the degree of contact between and migrations of Pleistocene hominin populations (Tostevin 2013, Scerri et al. 2014). Their methodologies are grounded in a rigorously defined middle range theory, but independent tests of the approach have only recently begun. Bridging the gap between individual knapping events, and the trans-generational patterns we see in the archaeological record will likely require multiple approaches, including applying these methodologies to carefully selected archaeological cases.

Lithic data were collected from late prehistoric sites in the Tonto Basin of Arizona dating between A.D. 1250 and 1400. The contextual and chronological control at these sites allow for us to measure variability in lithic technology within and between generations at sites across the basin. Here, we are able to evaluate the match between those patterns and expectations based on existing theory and our prior knowledge of regional social networks. Well dated late prehistoric and protohistoric lithic assemblages from intensively studied regions hold great potential in bridging gaps in our understanding of cultural transmission of lithic technologies, and should be studied to compliment other experimental approaches.

Pailes, Matthew (University of Arizona)

[171] *Spatial and Temporal Variability in Hohokam Inequality*

This paper will investigate synchronic and diachronic inequality among the Hohokam of southern Arizona. The Hohokam were an irrigation dependent, middle range society that occupied the low Sonoran Desert from approximately A.D. 500 to 1500. Over this impressive temporal span there were substantial changes, gradual and punctuated, to organizational systems, demographic pressure, and subsistence bases. The analysis presented in this paper will draw upon available data sets from substantial CRM excavations and some survey projects. The Gini coefficient and Theil T measures of inequality provide a means of analyzing inequality and quantifying at what organizational level it is most pronounced, e.g. household, settlement, community, or basin. Changes in relative levels of inequality will then be compared to the established cultural history of the area to understand how inequality contributed to substantial social change. This approach suggests some changes tied to environmental degradation or demographic pressure may have had more proximate social drivers.

Paine, Richard (University of Utah)

[88] *A Demographic Perspective on Maya Collapses*

Since John Bongaarts introduced it in 1978, demographers have used the concept of proximate and ultimate causality to understand fertility, mortality, and other demographic events. Bongaarts distinguished between proximate causes of fertility, like contraceptive use or age at marriage, and ultimate causes like socioeconomic class or education, which affect fertility through those proximate causes. The proximate-ultimate framework could provide Mayanists with a more sophisticated, and ultimately more testable, means of exploring hypotheses of the decline of Classic and Preclassic Maya centers. Hazards analysis would provide clear, statistically sound, means of testing hypotheses about Maya site abandonment within the proximate/ultimate framework. Outcomes explored would be site abandonment, either on the household level or the polity level, perhaps in the presence of a possible proximate cause, for example drought. The Maya experienced a series of droughts across the Preclassic and the Classic, which they survived with varying success. Why did some Maya populations survive some droughts better than others? Drought could be expressed as either a proximate or an ultimate cause of abandonment depending on the specific hypothesis being tested. Explanatory variables could include population density, land use factors, the presence of drought, or military defeat, or an interaction between factors.

[88] *Chair*

Paja, László [149] see Kostrzewa, Agata

Palacios, Elsa Olimpia [168] see Sandoval, Cindy

Paling, Jason [234] see Sternberg, Evan

Pallán Gayol, Carlos [256] see Ek, Jerald

Palmiotto, Andrea (University of Florida)

[133] *Fishing Practices and Effective Seasons: An Evaluation of Zooarchaeological-Based Seasonality Studies in the Lower Suwannee Region of Florida*

This paper critically evaluates the concept of seasons as utilized in zooarchaeological studies of coastal settlements. The project aims to show that "seasons," as a matter of perception, emerge from interplay between natural processes and human practices. Because processes and practices vary geographically and historically, effective seasons are contingent on local circumstances and histories. This paper presents methods for utilizing data on present-day fish populations in the Lower Suwannee area of the Florida Gulf Coast to model locally relevant seasons and apply them to interpretations of coastal settlement over much of the last 4,500 years.

The research provides the first fine-screened zooarchaeological analyses for the lower Suwannee region. Assemblages are interpreted via taxa abundances, allometric estimates, and diversity values. One key result suggests that mobile and sedentary practices co-existed among coastal occupants. Through time, people have been sedentary within the region as a whole, but moved between locations based on cultural and environmental factors. Interpretations are enriched through assessments of multiple coeval sites over single contexts.

Pálsdóttir, Lilja [210] see Feeley, Frank

Palsson, Gisli [261] see Strawhacker, Colleen

Palumbo, Scott (College of Lake County) and Laura Brodie (University of Wisconsin-Madison)

[97] *Mortuary Theatrics and Chiefly Power in Panama and Costa Rica*

This paper explores the mechanisms by which sumptuary art was deposited in mortuary contexts in parts of southern Central America. Rather than signal the existence of "eliteness" or chiefly office, it is argued that the production and procurement of mortuary art was one feature of a factionalized political landscape. The burial of staggering quantities of this artwork may be interpreted as deflationary attempts to limit the capital available to rivals. Such practices may have promoted a zeitgeist of conspicuous consumption that frustrated attempts at further political consolidation in the Isthmus.

Pan, Feifei [65] see Brown, Andrew

Panyushkina, Irina (Tree-Ring Lab, University of Arizona), Steven Leavitt (Tree-Ring Lab, University of Arizona) and John Zawiskie (Cranbrook Institute of Science)

[218] *Annually-Resolved Environmental proxies in the Great Lakes Region, 14 ka to 10 ka BP: A Time of Paleo-Indian Hunters and Megafauna Extinction*

The last deglaciation was characterized by numerous abrupt climate shifts including the extended Bølling and Allerød warm periods and the Preboreal, Younger Dryas, Older Dryas and Intra-Allerød cold periods, which caused loss of stability across the periglacial landscapes of the Great Lakes region. To date, assessing the possible impact of abrupt late glacial environmental change in this area has been limited by paucity of high-resolution environmental proxies that can be compared to the chronology of Paleo-Indians and megafauna. A Great Lakes Subfossil Tree Ring network (GLSTR) generated from buried wood of the U.S. Midwest addresses this problem through: 1) increased precision of calendar dating of major changes in vegetation, and geohydrology, and 2) tree-ring reconstruction of climatic variability. We use tree-ring proxies (ring-width index, $\delta^{13}\text{C}$ and $\delta^{18}\text{O}$) to demonstrate the possible impact of abrupt environmental change on the pre-Clovis hunters and megafauna of southeast Michigan. This case study provides a model for evaluating this important transition elsewhere through detailed and finely-resolved temporal evidence of hydrological regime shifts during the last deglaciation.

Papathanasiou, Anastasia [166] see Parkinson, William

Papathanassopoulos, Giorgos [166] see Parkinson, William

Pappa, Maria [189] see Vaiglova, Petra

Pappi, Cinzia

[12] *The Cultural Landscape of the Region of Koi-Sanjay (Koya)*

The dynamics of the expansion of Assyria involved the creation of a network of infrastructures which enabled the movement not only of goods and people, but also of technologies and ideas. Excavations at Satu Qala (Iraqi Kurdistan), the Assyrian provincial capital of Idu has highlighted the role of its region within the network. This area, located along the valley of the Lower Zab, served as a multicultural borderland both between southern and northern Iraq and between the valley of the Tigris and western Iran from at least the second millennium BCE on. The data gained by the excavations at Satu Qala combined with preliminary data gained by the new archaeological survey project of the region of Koi-Sanjaq provides some working models which can be applied for a better understanding of the regional infrastructural system. This paper will focus on the links between the regional infrastructural network of the region

and the transnational communication system discussing the still unsolved problem of the cultural and economic connections of the capital of Idu with its hinterland.

Parcak, Sarah (The University of Alabama At Birmingham)

[53] *There and Back Again: A Space Archaeology Journey*

This paper will discuss the range and type of studies possible based on past and current advances in the field of satellite remote sensing. It will focus on work in the Middle East, North Africa, the Mediterranean, Europe, and North Atlantic. The paper will primarily focus on the range and type of questions it is possible to ask (and in some cases answer) using a diverse range of satellite datasets combined with intensive ground survey and excavation. It will also provide a range of possibilities about where the field of "space archaeology" is headed with new advances in technologies.

Parcero-Oubiña, Cesar [259] see Salazar, Diego

Parditka, Györgyi [149] see Duffy, Paul

Parditka, Györgyi (University of Michigan), Paul Duffy (University of Toronto), László Paja (University of Szeged), Ádám Balázs (University of Miskolc) and Justine Tynan (Quinnipiac University)

[149] *Rogue Utopians or Bumpkins on the Margin? Bronze Age Mortuary Customs in the Marshlands of the Great Hungarian Plain*

Many archaeologists argue that the emergence of a social elite in the Bronze Age of the Great Hungarian Plain is due to the parallel appearance of a specialized trade network they were able to control. This poster focuses on the burial customs at the Békés 103 site, a Bronze Age cemetery in Eastern Hungary. This area saw growth in population, the intensification of farming, and increases in metal production during the Bronze Age, but the settlements lack any evidence for social hierarchy. Do mortuary practices reveal a different ideology and trajectory in this area? By analyzing the mortuary customs at this site, we hope to determine whether the existence of exotic goods or other funerary displays indicate different patterns of participation in the trade networks. By comparing the site to neighboring cemeteries, we will also investigate whether these burial practices are similar to the larger region's patterns, or different and therefore indicate some kind of isolation from other settlements in the Carpathian Basin.

[149] *Chair*

Parfitt, Anne [148] see Brown, James

Pargeter, Justin (Stony Brook University)

[177] *Cincilliths: A New Term Describing Systematic Small-Unretouched Tool Production*

The term "microlith" has grown to include a range of small tool technologies beyond those for which it was originally intended (small retouched geometrics). This definitional dilemma has resulted in a loss of precision in studies of technological miniaturization. Miniaturization includes the production and use of small-unretouched flakes from small cores. This paper proposes a new term for this phenomenon, Cinci-liths (Cinci: isiXhosa for small) that solves the problem of distinguishing these tools from those currently subsumed under the term "microliths." The term is neither region nor time specific, but is intended to identify and describe broader processes of miniaturization in unretouched toolkits. The paper presents a case study detailing a Cincillith assemblage containing small unretouched flakes (c. < 1 cm) and small cores (c. < 0.1 g) made during the terminal Pleistocene (c. 12-14 Ka cal B.P.) at Ntloana Tšoana rockshelter in Lesotho. Analogous Cincillith assemblages are reported from elsewhere in this region suggesting that such toolkits were in widespread use during the Late Pleistocene in southern Africa. The antiquity of these processes of toolkit miniaturization remains unknown, but not unknowable. Using appropriate terminology combined with statistical and size-based approaches to defining and quantifying Cincillith assemblages easily solves this problem.

Paris, Elizabeth (Wichita State University) and Roberto López Bravo (Universidad de Ciencias y Artes de Chiapas)

[88] *Surviving the Maya Collapse: A View from Moxviquil, Chiapas, Mexico*

Although the famous "Maya collapse" in the ninth century A.D. destabilized many powerful Southern Lowland Maya Late Classic kingdoms, the small polities of highland Chiapas not only survived, but thrived. Excavations in the Central Highlands of Chiapas suggest that the small cities and towns in this region maintained their roles as political centers throughout the Late Classic-Early Postclassic Period transition. Recent excavations at Moxviquil provide evidence for the economic and social foundations of households at the site during and beyond the ninth century, which suggest that this period was one of stability and prosperity for its residents. Domestic structures were renovated and expanded multiple times during this period, in conjunction with the expansion of residential settlement into new areas. Economic stability was likely derived from diversified local economies and relatively flexible and shifting participation in long-distance trade networks. A micro-scale perspective on household life and activities can shed light on contributing factors to broader political and economic stabilizing trends within the region during an otherwise turbulent period.

Park Boush, Lisa [222] see Berman, Mary Jane

Parker, Evan (Tulane University)

[127] *The Intermediate Elite of the Puuc Maya Suburbs: Excavations at Terminal Classic Escalera al Cielo*

Seven years of extensive horizontal excavations at the Terminal Classic suburban hilltop complex of Escalera al Cielo have uncovered nearly the full range of social and economic activities undertaken by a class of intermediate elites on the edge of the Kiuc polity. Rather than considering Escalera al Cielo as simply another rung in the settlement hierarchy, we view it as a constituted community that formed and maintained ties of affiliation with the urban elite of Kiuc and with the commoners who inhabited surrounding hilltops. A distinct community identity was formulated at Escalera al Cielo through several practices, including episodic ritual events, the investment of wealth into stone houses, the construction of a civic-ceremonial center, and a variety of more mundane economic activities. Around 1000 A.D., the inhabitants of this community rapidly abandoned the hilltop, but cached materials in such a manner as to suggest an anticipated return. Given the demographic collapse of the Puuc around this time, Escalera al Cielo may serve as microcosm of the booming Terminal Classic Puuc Maya economy, but also of the consequences of high population densities coupled with intensive resource exploitation.

[127] Chair

Parker, Evan [127] see Kohut, Betsy

Parker, Bradley (University of Utah)

[219] *Fragments of the Past: Applying Microarchaeological Techniques to House Floors at Tumilaca, Moquegua, Peru*

For decades archaeologists have been trying to develop methodologies that will help them determine what activities took place in and around domestic structures. Since people tend to clean activity areas, especially those that are used repeatedly, visible artifacts like pottery, bones, and stone tools are rarely discovered in the context where they were originally used. Instead, such artifacts are usually discovered in refuse heaps or other secondary contexts. Microarchaeology, the study of the density and distribution of tiny fragments of pottery, bone, worked stone, and other microartifacts, offers a potential solution to the problem of determining the nature and location of activity areas at archaeological sites. This paper presents the preliminary results of microarchaeological research carried out during the summer of 2015 at the site of Tumilaca in the middle Moquegua valley of southern Peru. In it, I enumerate some of the benefits and limitations of microarchaeological research and make suggestions about how microarchaeological research can be integrated into on-going field projects.

Parker-McGlynn, John

[123] *Pre-Historic Archaeological Site Location Modeling Using Raster Overlay Analysis in GIS*

The goal of this paper is to demonstrate the ability to create a viable site location model of pre-historic archaeological sites in the Columbia Plateau Region that are older than 15,000 B.P. The site location model is created by analyzing several different variables: previously discovered archaeological sites in the Columbia Plateau Region older than 10,000 B.P., Missoula Flood modeling, Bonneville Flood geological evidence, and prehistoric climate data. The prehistoric site locations are used to determine habitation variability such as distance from water, slope, and elevation. The paleo climate data is used to determine what type of environments people of the Columbia Plateau were willing to live in, and apply that to climate data from 15,000 B.P. to determine habitation variability. Since no archaeological evidence would have withstood the Bonneville and Missoula Floods, a flood pathway shapefile is created as a limiting variable. All of the data is compiled and imputed into a GIS program, and by using the raster overlay method, a site location model completed. The process of creating this viable preliminary model also clarifies previously unforeseen steps needed to refine and improve it into a working model.

Parkinson, William (Field Museum of Natural History)

[166] *The Diros Project: Multidisciplinary Investigations at Alepotrypa Cave and Ksagounaki Promontory, 2010–2015*

This paper summarizes the results of multidisciplinary research conducted by The Diros Project in Diros Bay on the western Mani Peninsula of the southern Peloponnesos. The project centers around Alepotrypa Cave, a massive cave that was used for burials and other ritual and domestic activities throughout the entire Neolithic Period (ca. 6,000–4,000 B.C.). Under the direction of Dr. Giorgos Papathanassopoulos (Honorary Ephor of Antiquities), The Diros Project was established by a team of international researchers in 2010 to catalog and publish the materials that had been excavated from Alepotrypa Cave and to survey Diros Bay in an attempt to place the cave site into a regional context. Excavations also were conducted at the open-air settlement of Ksagounaki Promontory, located adjacent to Alepotrypa Cave, where the team discovered evidence of an extensive settlement and burials that date exclusively to the Final Neolithic Period. A rock-built Mycenaean ossuary also was discovered on the promontory, suggesting the locale had retained a special importance into the Bronze Age.

[166] Chair

Parris, Caroline (Tulane University)

[270] *Big Trash, Little Trash: A Comparison of a Late Classic Maya Feasting Deposit and a Household Midden*

Feasting is often identified in the archaeological record based on the discovery of high ceramic frequencies and the presence of faunal remains in a concentrated area. While these characteristics can prove useful an initial identification of feasting behavior, further examination of the potential feasting assemblage and comparison with other types of archaeological deposits is necessary to fully support a feasting interpretation. This paper compares two deposits from the Classic Maya site of La Corona, Peten, Guatemala: a potential feasting deposit and a contemporaneous household midden. Examination of ceramic type frequencies, vessel forms, and rim diameters as well as analysis of non-ceramic materials, including chert, obsidian, and faunal remains, demonstrates the similarities and differences between the deposits while highlighting the ancient Maya behaviors which created the deposits. This study broadens our understanding of Late Classic Maya feasting and household consumption activity while emphasizing the importance of comparison when examining potential feasting deposits.

Parrish, Ryan [218] see Miller, D. Shane

Parsell, Veronica [111] see Greene, James

Parsell, Veronica, James Greene (Cardno), Cathy Draeger-Williams (IDNR-DHPA), Paul Leffler (USACE-Chicago District Regulatory Branch) and George Strack (Miami Tribe of Oklahoma)

[287] *One Project, Multiple Perspectives: An Example of Successful Section 106 Consultation in Northwest Indiana*

When completing the Section 106 process, the parties involved often have differing opinions and goals regarding the consideration of cultural resources. Recent completion of a Phase III data recovery of a prehistoric site in northwest Indiana highlights the Section 106 process as a successful tool for communication between the federal agency, project applicant, SHPO, Native American tribes, and the CRM contractor regarding the consideration of significant cultural resources. While each of the aforementioned parties had varied opinions and goals regarding the project, through the Section 106 process, successful mitigation was completed such that impacts to the resource were mitigated, prehistoric human remains were protected, and the project proceeded with minimal delay. This presentation discusses aspects of the Phase III mitigation for the Singleton Quarry project from the perspectives of different parties involved in the Section 106 process, including the Federal Agency, the SHPO, Native American tribes, and the CRM contractor. This dialogue provides insight regarding the position and viewpoints of various entities often involved in projects pursuant to Section 106 of the NHPA.

Parsons, Ted (University of Alaska Anchorage)**[39]** *Practical and Affordable Alternatives to Terrestrial Laser Scanning*

3D modeling to document artifacts, features, and sites is commonplace in archaeology today. The use of terrestrial laser scanning (TLS) is the standard for creating 3D models. The limitation of this type of scanning is that the units are bulky and expensive, and archaeological work is often done in remote locales under limited budgets. I present information on portable, affordable, and easily implemented alternatives to TLS. Three scanning methods are assessed: photo modeling using Agisoft's PhotoScan® software, desktop laser scanning with the NextEngine® short-range scanner, and infrared imaging using Microsoft's Kinect® depth-mapping sensor. Each alternative works well without the need for internet or reliable electrical connections. The goal is to create a suite of field-deployable imaging equipment, procedures, and workflows. The methods were tested in well-lit and dark conditions indoors and outside. The results of the tests are that these techniques permit successful 3D information capture in a wide variety of conditions. An additional benefit is that output from each tested method is viewable in many standard file formats on conventional and tablet computers and smartphones.

Parsons, Alexandra (National Park Service)**[133]** *A WEIRd Tale: 2,500 Years of Fishing in an Everglades Slough*

In 1968, a dredging project alongside the Anhinga Trail in Taylor Slough, Florida unearthed an unusually large collection of worked bone objects. Peat deposits in the slough afforded excellent preservation conditions—some of the bone tools still contain wooden shafts and pitch. Sometime after its discovery, the collection was split between different institutions and lost. This important collection has recently been relocated and rejoined and is described in this paper. The assemblage consists of over 250 worked bone artifacts including socketed bone points, bipoints, hafted shark teeth, utilized stingray spines, and utilized sawfish teeth.

The Anhinga Trail site was an important place on the landscape that was used for over two-thousand years. During the dredging project, a pine log structure was encountered that was likely a fish weir or raised platform. The worked bone assemblage contains objects that are suggestive of procurement strategies well-suited to fishing from a weir or platform. The bone artifacts are currently being studied with 3D scanning, computed tomography (CT) scanning and reflectance transformation imaging (RTI) to better understand manufacture techniques and use-wear patterns. This paper considers the role of these bone items in the long-lived subsistence technology and practice in pre-Columbian South Florida.

[133] *Chair*

Pascual, Daniel [259] see Pavlovic, Daniel

Pascual Soto, Arturo [154] see Rocha García, Raúl

Pascual Soto, Arturo**[264]** *Divinos Señores de El Tajín, política e ideología en el Epiclásico local (ca. 800–1100 d.C.)*

Los resultados derivados de nuestras investigaciones en el conjunto arquitectónico del Edificio de las Columnas, el emplazamiento por excelencia de las actividades de la elite en el Epiclásico local, han sido de enorme valor para enfocar de mejor manera el estudio de las características culturales del último florecimiento de la civilización de El Tajín. La ponencia muestra una serie de hallazgos efectuados en el curso de nuestras más recientes excavaciones en un intento por explorar la ideología y el sistema de creencias sobre los que se construyó la etapa final de una de las civilizaciones más importantes del México antiguo.

[154] *Chair***Pastrana, Alejandro (INAH)****[129]** *Explotación teotihuacana de obsidiana verde en La Sierra de Las Navajas*

Se analiza el proceso de explotación minera, talla y distribución de la obsidiana verde por parte de Teotihuacan en La Sierra de Las Navajas, con base en las excavaciones arqueológicas y recorridos detallados de superficie. Hemos identificado en el yacimiento tres tipos de locus de talla, talleres familiares, talleres especializados y áreas individuales de talla. La producción en general en el yacimiento comprende elaboración de instrumentos, armas, objetos religiosos y de vestimenta además de la utilización de instrumental de obsidiana para la manufactura de artefactos de maderas y fibras locales.

Patch, Shawn [8] see Gale, Sara

Patel, Sneh**[252]** *The Bazaar Side of the Indus Valley: A Framework for Understanding the Merchant Economy of the Indus Valley Culture*

The craft industries and trade networks of the Indus Valley are perhaps some of the most well understood and explored aspects of this early south Asian civilization. While the nature of production and spatial distribution of certain commodities are known, it is still uncertain within what form of economic structures these exchanges transpired. This paper proposes that the "bazaar" might provide a suitable framework through which to understand the exchange of these commodities. While bazaars often invoke images of the exotic and the chaotic, these conceptions overlook the structures and values organizing this type of marketplace. Drawing on research of both contemporary and historical bazaars, this paper shows how our current knowledge of Indus Valley sites and certain categories of archaeological evidence such as standardized weights, the Indus script, or various commodities support the existence of a bazaar economy within this culture. Not only could this further our understanding of the marketplace within the core Indus region, but could also lead to a better understanding of how bazaars connected local communities and merchants to larger economic networks.

Pateman, Michael (National Museum of The Bahamas), Kelley Scudder (Zemi Foundatoin) and Christopher Davis (National Museum of The Bahamas)**[142]** *Visions of Colonial Landscapes: Through the Eyes of African Caribbean Communities*

The National Museum of The Bahamas/Antiquities, Monuments and Museum Corporation (AMMC) is the agency designated to identify, manage and conserve tangible and intangible cultural resources throughout The Bahamas. The AMMC is in the process of developing a protocol model that will further

enhance the identification and conservation of identified and yet to be identified archaeological sites. An essential component of the development of this process is the inclusion of members of each island community through the implementation of oral histories and ethnographic research. Through the collection of oral histories and assessment of archaeological sites on Cat Island the model developed by AMMC will provide agencies and researchers with a venue that will ensure a comprehensive approach to the identification and conservation of cultural resources throughout the Bahamas. This multi-faceted approach will assist us in developing a better understanding of the variation in the classification of specific sites and other tangible cultural resources as identified by archaeologists, government and non-government agencies, and members of the community and will play in integral part in the development of long term resource management initiatives throughout the Bahamas.

Patnukao, Areerut (Areerut Patnukao (Louisiana State University))

[180]

Spatial Analysis of the Dharmacakras Distribution Associated with the Dvāravatī Period, Thailand

Dvāravatī (spanning late sixth–eleventh centuries C.E.) is one of the oldest religious cultures and artistic periods of Thailand and Southeast Asia. Dvāravatī history cannot be written due to a lack of epigraphic evidence or chronicle. Its center, geographical extent, and political organization remain unclear. The archaeological and geographical evidence suggests that moated sites were associated with the emergence of Dvāravatī civilization. Among Dvāravatī style artifacts found within these sites, stone Dharmacakra (the Buddhist Wheel of the Law/the Wheel of Dharma) represents the most comprehensive surviving evidence for early Buddhism in Thailand. Besides India, Dharmacakras were only found in Dvāravatī culture. Local environmental constraints suggest that these Dharmacakras mainly found only at major Dvāravatī sites. This ongoing work focuses on the investigation of the problems and possibilities for Geographic Information System (GIS) analysis in the Dvāravatī archaeology through archaeological survey and archives, as well as spatial analysis. The objectives are to examine a correlation between intensification of Dharmacakras and the sizes or numbers of Dvāravatī's sites, to analyze different Dharmacakras' artworks and their spatial locations, and to focus on the functions of Dharmacakras whether they were served as symbols of the regional centers or indicated the kingdom margin.

Pattee, Aaron (Department of Anthropology at the University of Nebraska Lincoln), Bernhard Höfle (Institute of Geography at Heidelberg University) and Christian Seitz (Interdisciplinary Center for Scientific Computing)

[188]

Integrative 3D Recording Methods of Historic Architecture, Burg Hohenecken Castle from Southwest Germany

This paper explores the methodology and application of laser scanning and photogrammetric recording methods to a very complex castle ruin. These methods allow for exact measurements to be made and the production of 3D digital models of the structure in question. The models built from the respective data combine the measuring strength of laser scanning with the visual aesthetics of photogrammetry. The case study is the medieval castle Burg Hohenecken in the city of Kaiserslautern in southwest Germany. Once digitized as a 3D model, the castle can be virtually controlled and examined, providing an opportunity to determine the age and potentially to reconstruct the castle from the different periods of its construction and expansion. Future analyses will include the identification of the different stone types and ages from the different building phases, the viewsheds from each respective building phase and perhaps the discovery of structures which have been completely lost.

Patterson, Erin (Tulane University) and Carolyn Freiwald (University of Mississippi)

[86] *Mobility in the Central Maya Lowlands: Strontium, Oxygen, and Carbon Isotope Values from La Corona and El Perú-Waka'*

The movement of Classic Maya people has been recorded in numerous epigraphic texts. These references, along with migration studies at Tikal, Copán, and other smaller communities, suggest that there was a considerable amount of migration among Maya centers. We present the results of strontium, oxygen, and carbon stable isotope analysis of 71 individuals buried at the sites of La Corona and El Perú-Waka' in the northwest Petén, Guatemala. The sample includes single and multiple burials, non-burial deposits, and individuals from residential groups on the outskirts of La Corona and El Perú. We also describe the residential life histories of 14 individuals, including Lady K'abel. Initial analysis reveals little long-distance migration and suggests that most movement occurred among Central Lowland centers, lending support to the history recorded in the epigraphic texts. We also discuss the use of elemental data to differentiate populations in the Maya region.

Patterson, Jody (Montgomery Archaeological Consultants)

[104]

Formative Period Changes in Regional Interaction and Influence in Nine Mile Canyon, Utah

Fundamental issues regarding the interaction of the formative inhabitants of Nine Mile Canyon with their neighbors in Castle Valley and the Uinta Basin relate to temporally distinct changes identified in the canyon's archaeological record. Arguments pertaining to changes in land use patterns, artifact assemblages, and the development of seemingly defensive structures hinge on connecting distinct material cultural characteristics with chronometric data to develop a first approximation of shifting regional influences that likely occurred in the canyon between A.D. 200 and A.D. 1200. Evidence of regional influence and exchange are evaluated in light of a scaled down version of the peer-polity interaction model to identify possible mechanisms associated with structural changes in the greater east-central Utah interaction sphere during the Formative Period.

Patterson, David [181] see Himes, Sarah

Patton, Katherine (University of Toronto)

[287]

Learning to "See" like an Archaeologist: Making the Most out of Field Trips in Undergraduate Education in Archaeology

Field trips are an integral component of undergraduate education in the natural sciences and in human geography. In archaeology, field trips are a nexus of pedagogy, heritage tourism, public archaeology and critical theory. British archaeological theorists and educators have long discussed these elements of field trips, perhaps because such trips are central to undergraduate studies in the discipline in the U.K. Little has been done, however, to assess the impact of archaeological field trips on student learning, both in the short and long term. How do we know, for example, that students get more out of visiting an archaeological site than they do from writing a research paper on the same topic? How do we prevent field trips from being just sightseeing? In this paper, I present the results of a preliminary study attempting to measure the outcomes of archaeological field trips in university-level education. I consider also how we, as educators, might help students get the most out of field trips and help them to "see" heritage and archaeological sites "like archaeologists." This research is drawn from two recent field trips with University of Toronto undergraduate students to the Ohio Valley and Colorado Plateau.

Pauketat, Timothy (University of Illinois) and Susan Alt (Indiana University)

[18]

Visions of Substance in Eleventh Century Mid-America

Various archaeological approaches exaggerate relations with objects at the expense of the affectivity of substances, phenomena, materials, and spaces. New data from the eleventh century foundations of the Cahokian world suggest that the experience of substantial, phenomenal, material, and spatial qualities were the primary constituents of a form of religious conversion also known as Mississippianization. Circular buildings at the Emerald site embodied these qualities and point to the creation of novel relationships between water, earth, moon and people. Cahokians carried such practices far to the north, where another shrine complex highlights the need to consider ontologies alongside colonial or missionizing dynamics.

[132] *Discussant*

Pavao-Zuckerman, Barnet (University of Maryland)

[28] *"Just Move On": Lessons from the Career of Dr. Betsy Reitz*

Betsy Reitz is universally admired as a scholar, mentor, and colleague, and known for her prodigious production of high-quality, interdisciplinary, and rigorous scholarship. She taught her many students that research should be question-driven, anthropologically significant but not disciplinary confined, and multiscalar, with an emphasis on the long view. Betsy has long crossed the traditional divide between pre- and postcolumbian archaeology, exploring long-term trends in fisheries exploitation in the southeast, change and continuity in Native American subsistence strategies, and global climate change. She also trained a generation of environmental archaeologists interested in anthropogenic and non-anthropogenic ecological change, pushing us toward interdisciplinarity. She taught us to be judicious in our use of technology; archaeological science is question-, not machine-, driven. I strive to live up to Betsy's superb model of scholarship and mentoring. In my research on the colonial experiences of Native peoples, I attempt to answer "big" questions, like the colonial origins of the modern global economy. My students and I also seek to better understand the impacts, and mitigation, of introduced Eurasian livestock on Sonoran Desert environments. The shadow of Betsy's career is long, as her own students train another generation of zooarchaeologists to produce rigorous, contextualized, and interdisciplinary research.

[28] *Chair*

Pavao-Zuckerman, Barnet [134] see Mathwich, Nicole

Pavlovic, Daniel (Universidad de Chile), Rodrigo Sánchez (Universidad de Chile), Daniel Pascual (Universidad de Chile) and Andrea Martínez

[259] *Dynamics of Interaction and Integration between the Tawantinsuyu and the Local Populations of the Kollasuyu: Contributions from the Mediterranean Valleys of Central Chile*

This paper aims to contribute to a critical analysis of the dynamics of interaction and integration between the Incas and the local populations in the Kollasuyu based on the results of research projects carried out during the last decades in the valleys of Aconcagua, Maipo, and Mapocho in the Mediterranean area of the western slope of the Andes. The collected records point to complex processes of acceptance, rejection and differential integration of local populations with respect to the Tawantinsuyu. These results are considered in the framework of the principles of inclusion/exclusion and cultural interdigitation, among others, suggesting interaction dynamics that would have sustained in ritual activities in different types of contexts.

Pawlowicz, Matthew (Virginia Commonwealth University)

[269] *Cosmopolitan to Different Degrees: Daily Engagement with Maritime Culture at Swahili Towns at the Turn of the 16th Century*

One of the most important developments from the past couple of decades towards understanding the history of the East African coast has been an appreciation of diversity among Swahili communities. Those communities each experienced the broad trends and developments that have been used to characterize Swahili history, but their experience of those trends was not uniform. This paper explores such diversity towards the end of the Swahili florescence at the turn of the sixteenth century, drawing on recent work on archaeological materials from four sites: Mikindani, Gede, Songo Mnara, and Pujini. The material from these sites is used to explore the degree to which the inhabitants of these towns engaged with Indian Ocean economic networks and cosmopolitan, Islamic ideals in their daily lives. The archaeological evidence provides clear evidence for differences in their engagement, owing to local conditions and the particular histories of each community. Understanding those differences allows us to better appreciate the causes and implications of Swahili diversity, particularly at this moment of increasing disruption in the western Indian Ocean.

Pawn, Ian (Florida State University)

[164] *Burial and Kinship during the St. Johns: A Bioarchaeological Study of the Ross Hammock Site*

Many aspects of St. Johns lifeways have been studied, but kinship, the most fundamental unit of human organization, has rarely been addressed beyond identifying vaguely defined "lineages" or "kin groups." Some have argued that burial mounds represent kin groups, and this paper investigates St. Johns period kinship systems using the biological affinity of individuals from Ross Hammock Mound, a burial mound at Canaveral National Seashore in Florida. Biological distances between individuals are measured using metric and non-metric dental traits. These data are compared to burial provenience to identify biological/spatial patterns within the mound. Population structures identified through these methods not only help nuance understanding of the construction and use of the burial mound, but clusters of burials help identify interred kin groups. These biological patterns are then compared to household and settlement data, mortuary treatment, and historic records to model kinship during the St. Johns period at Ross Hammock. The evidence suggests the utilization of the mound by a genetically related group, and burial treatment emphasized community kin identity over status differences. Given available data on settlement organization and resource gathering strategies employed during the St. Johns, a bilateral/bilocal (or ambilocal/ambilineal) kinship system is suggested by the current research.

Payne, Jennifer (Los Alamos National Laboratory), Anthony De La Rosa (Los Alamos National Laboratory) and Kelly Michel (Los Alamos National Laboratory)

[64] *Virtual Preservation and Outreach for Nake'muu Pueblo: Using Technology to Make Inaccessible Sites Accessible*

Nake'muu Pueblo is situated at the tip of a mesa above the confluence of Water Canyon and Cañon de Valle at Los Alamos National Laboratory (LANL) in Los Alamos, New Mexico. This area of LANL is not accessible to the public. Nake'muu is an ancestral site to the Pueblo de San Ildefonso. The site is important as a Coalition period (A.D. 1200–1325) site and because it was reoccupied during the Pueblo Revolt (A.D. 1680–1682). Nake'muu is also the only pueblo at LANL that retains standing walls. For 15 years, the site has been studied, monitored, mapped, and photographed. Given the unique nature of the site, the public and members of the Pueblo de San Ildefonso frequently request tours, but site location and security requirements make access difficult. For this reason, cultural resources staff worked with members of LANL's Virtualization Team to create an interactive three-dimensional model of the site using an iPad. The application is part of an exhibit at the Bradbury Science Museum in Los Alamos. The methodology and technology used to create the application is presented in this poster along with information about how it is used for outreach and for documenting changes at the site over time.

Payntar, Nicole [198] see Weinberg, Camille

Pearsall, Deborah [220] see Siegel, Peter

Peart, Daniel (The Ohio State University), Sara Watson (University of Texas at Arlington), Hannah Keller and Naomi Cleghorn (University of Texas at Arlington)

[181] *Variation in Site Use through Time: Find distribution at Knysna Eastern Heads Cave 1, (Western Cape, South Africa), from Marine Isotope Stage 3 through the Last Glacial Maximum*

Fluctuating sea levels during Marine Isotope Stage 3 (MIS3) resulted in radically shifting environmental zones and shoreline position along the southern African coast. Investigation of the intensity of site use and find types relative to modeled coastline proximity provides insight into early human responses to such environmental perturbations. Knysna Eastern Heads Cave 1 (KEH1), a coastal cave site in Western Cape Province, is the only documented locality along the modern coast that preserves a significant archaeological deposit spanning the latter part of MIS3 and MIS 2 through the Last Glacial Maximum (LGM). During the 2014 and 2015 KEH1 field seasons, over 10,000 finds were plotted throughout a stratigraphic sequence dating between 46,436 and 18,890 Cal B.P. Plotted finds include bone, shell, ostrich eggshell, charcoal, ochre, lithic shatter, and lithic tools consistent with Early Later Stone Age assemblages. Our statistical analyses show that variation in the distribution and density of find types is indicative of changing landscape and environmental conditions. Data at KEH1 are indicative of an intense period of site occupation prior to the LGM. The KEH1 sequence provides a rare opportunity to investigate human behavioral flexibility in response to landscape and ecological change in the Late Pleistocene.

Pecci, Alessandra [125] see Lancelotti, Carla

Pecci, Alessandra (University of Barcelona)

[125] *Combining Residue Analysis of Floors and Ceramics to Identify Activity Areas and the Use of Space*

Residue analyses have been applied for more than 40 years to the study of ceramics and floors (Barba, Bello 1978; Condamin et al. 1976). This has allowed to better understand ceramic contents, on the one side, and the traces left by human activities on floors, on the other. Both these disciplines provide important information on human activity markers, focusing on the use of ceramics in the first case and the use of space and the function of structures in the second. However, a deeper understanding domestic and production activities and the use of space can be achieved when these two approaches are combined together. Here, we show examples of the combination of the two studies carried out in Italian archaeological sites from Etruscan to Medieval times.

[125] *Chair*

Peche-Quilichini, Kewin [257] see Tafani, Aurelien

Pecoraro, Luke (Boston University)

[51] *The Old World a Bridge to the New: Daniel Gookin Jr.'s Intercolonial and Transatlantic Connections in the Seventeenth Century*

Daniel Gookin Jr. is perhaps one of the better-known figures in colonial Massachusetts history, as an important civil servant and military leader. The third son of an English planter from Kent who settled in County Cork during the second phase of the Munster Plantation in 1611, Gookin Jr. was born in Ireland, and became involved in his father's plantation projects in Virginia, migrating to North America in 1625. This paper will outline the archaeological biography of Daniel Gookin Jr. and the influences from Ireland he brought with him to Massachusetts. Though the period of time that Gookin spent in Ireland was brief compared to the other places he lived, it was his first experience in a colonial project, and he carried the knowledge he gained from this venture into North America. The results of colonial entanglements made Gookin Jr. a cosmopolitan figure in the British Atlantic world in which his social networks of friends in England and family in Ireland, trade partnerships in New England and the Chesapeake, and his role as a military commander and mediator between Indians in Virginia and Massachusetts, are revealed in the dynamic archaeological record.

Pedersen-Guzman, Jeannine

[110] *The Incised Stones of CA-ORA-662, Pelican Hill in Orange County, CA*

A large scale data recovery investigation took place in the early 1990s at CA-ORA-662, Pelican Hill in Orange County, CA. The excavation revealed an array of Late Prehistoric artifact types including 124 incised stones, grooved stones and tablets. Among these are 41 stones incised with distinctive patterns, the majority of which have a simple cross hatch or diamond pattern. Three of the stones have more complex designs suggesting a non-utilitarian use. The collection of artifacts recovered from CA-ORA-662 including the incised stones is housed at the Dr. John D. Cooper Archaeological and Paleontological Center in Santa Ana, CA. The stones have been in storage for over twenty years. This paper will provide descriptions of the incised stones and provide a preliminary analysis of the recurring design elements.

Peebles, Giovanna [71] see Malloy, Maureen

Peebles, Matt [17] see Giomi, Evan

Peebles, Matt (Arizona State University), Barbara Mills (University of Arizona), Jeffery Clark (Archaeology Southwest), Benjamin Bellorado (University of Arizona) and Thomas Windes (National Park Service)

[17] *Social Networks and the Scale of the Chaco World*

Chaco Canyon in northwestern New Mexico has long been recognized as an important regional center characterized by impressive architecture and wide-spread influence across the Ancestral Puebloan region (ca. A.D. 800–1150+). Although few researchers dispute the strong similarities in construction styles and techniques most often used to track Chacoan influence, there is little agreement on what such similarities mean in terms of social, political, or

economic relationships. In this paper, we explore the nature and development of the Chaco World from a network perspective. Using information on the relative frequencies of ceramic styles and types, the geographic origins of lithic raw materials, and architectural features we evaluate material evidence for connections: 1) between Chaco Canyon great houses/great kivas and outlying communities and 2) among outlying Chacoan structures across the Southwest. By tracking the complex webs of overlapping connections across multiple lines of evidence through time, we seek to develop a relational perspective on the scale of the Chaco World as well as the centrality of Chaco Canyon itself in this broader sphere.

Pelier, Serenela (University of Florida), Tosha Dupras (University of Central Florida) and Rimantas Jankauskas (University of Vilnius)

[147] *Stable Isotope Evidence for the Geographic Origins and Military Movement of Napoleonic Soldiers during the March from Moscow in 1812*

In 2001, 3269 unidentified individuals were recovered from a mass grave in Vilnius, Lithuania. Archaeological context indicates that these individuals were likely soldiers that were a part of Napoleon's Grand Army. Geographical origins of 9 individuals from the mass grave were assessed utilizing stable oxygen isotope ($\delta^{18}O$) values that were extracted from femoral bone apatite. The carbonate oxygen isotope ($\delta^{18}OVSMOW$) compositions (24.5‰ to 26.4‰) suggest that all assayed individuals were non-local to the place they were interred, and most likely originated from central or western Europe. The $\delta^{18}OVSMOW$ values also suggest that the local Lithuanians were not burying their citizens in this grave and therefore support the identification of these individuals as Napoleonic soldiers. Complimentary analysis on this sample using stable carbon isotopes ($\delta^{13}C$) suggests that the percentage of C4 foods in the diet ranged from 17.8 percent to 31.7 percent, which overlaps with eastern European consumption patterns, the slight shift towards a higher C4 percentage is more representative of a central and/or western European diet. The results are significant because they provide further evidence that these individuals participated in Napoleon's Russian campaign of 1812, and that oxygen isotopes can be used to identify non-local individuals in this context.

Pellegrini, Evan [69] see Hockett, Bryan

Pelto, Brendan

[250] *Moderator*

Pelton, Spencer [115] see Grund, Brigid

Peña, Luis Alberto [63] see Levy, Jessica

Peña, Jose and Emily-Anne Davis (University of Central Florida)

[204] *Study of Archeobotanical Remains from El Campanario Site: A Preliminary Analysis of a Middle Horizon site in the North Coast of Peru, Huarmey Valley*

During the Middle Horizon, the Andean area experienced significant cultural transformations in settlement patterns, architecture, ceramic style, and subsistence strategies, which are commonly associated with the Wari Empire. The region surrounding the Wari capital in Ayacucho was transformed to increase agricultural productivity in order to support the growing population. The increase of agricultural productivity can be also observed in the provinces in which the transformation of the land was oriented towards the production of certain products along with the construction of canals and reservoirs. Preliminary excavation work at El Campanario was conducted in residential areas within the site in order to understand the social interaction of non-elite groups, the ceramic style recovered from this site suggested that the area was occupied during the Middle Horizon. In addition, macrobotanical remains of different species, both edibles and non-edible, revealed significant variation in plant products, which indicate that the inhabitants who resided at the site had access to a wide array of resources that could be related to the Wari influence in the Huarmey Valley. The macrobotanical remains found at El Campanario are comparative with those found at other archaeological sites within the coastal Andean region.

Peniche May, Nancy (UCSD)

[288] *Paths towards Complexity in the Maya Lowlands: Implications of Architectural Change at Cahal Pech*

The elucidation of how permanent settlements and social complexity evolved in the Maya lowlands has been a long-standing question among Mayanists. Recently, it has been proposed that the first permanent architecture in the Pasión River region (i.e., Ceibal) emerged as ritual complexes around 1000 B.C. rather than villages with permanent households (i.e., Inomata and colleagues 2013). Nevertheless, Middle Preclassic evidence from the Belize Valley (i.e., Cahal Pech) has depicted a different scenario. At Cahal Pech, the first permanent architecture consisted of households, which were changing through time in both form and function until becoming public buildings at the end of the Middle Preclassic. This evidence suggests that there were different paths towards permanent settlement and the emergence of social complexity in the Maya lowlands. Despite of these different paths, communities were not isolated as throughout the Middle Preclassic there was an increasing interaction among the regions of the Maya lowlands witnessed by similar architectural forms and other material culture.

[288] *Chair*

Peniche May, Nancy [288] see Ebert, Claire

Pentney, Sandra (Atkins)

[191] *Future Proofing Communities and Preserving Cultural Resources*

Climate change is already having observable effects on cultural resources within both the natural and built environments. As communities and governments strive to protect their assets from climate change impacts there is opportunity for advanced preservation practices. On the flip side of this, a lack of preservation planning within the construct of future proofing assets may have irreversible and detrimental effects to cultural resources of all types. This paper delves into opportunities for preservation while planning for climate change effect mitigation.

Pepe, James (Janus Research)

[253] *North Woodlawn Cemetery: Remotely Sensing Jim Crow*

North Woodlawn Cemetery served Fort Lauderdale's African American community during the period of legislated racial segregation. In the 1960s, a portion of the cemetery was purchased by the State of Florida and incorporated into the new Right-of-Way (ROW) for Interstate 95. In 2012, Janus Research began working with the Florida Department of Transportation on possible improvements in the vicinity of North Woodlawn. A major part of this research involved ascertaining if unmarked graves are present within the I-95 ROW. An unspoken assumption of project archaeologists and planners was that local citizens would welcome the excavation of remains from the ROW for reburial within current cemetery boundaries. Field methodology was limited to remote sensing techniques, including use of a cadaver dog, ground-penetrating radar (GPR), and radar tomography. Additional research involved the solicitation of information from local informants. This presentation provides the results, limitations and benefits of each technique used in the project. It also adds to the pioneering remote sensing studies conducted by Dr. William Jerald Kennedy in the 1980s on reported local burial sites. In a larger sense, this study also illustrates the perils of a project designed by the enfranchised for the ostensible benefit of the historically disenfranchised.

Perales, Manuel

[233] *Dining and Feasting with the Lords and Gods: A Reevaluation of the Nature of the Activities at the Inca Site of Hatun Xauxa in the Mantaro Valley, Peru*

Recent studies have shown the importance of commensal politics in the consolidation of Inca power and ideology, highlighting the leading role played by the pots as political tools. Following this perspective, this paper proposes a reassessment of the nature of the activities carried out at the Inca site of Hatun Xauxa in the central highlands of Peru, based on functional and distributional analysis of the state and local pottery recovered during excavations made in 2014 by the Proyecto Qhapaq Ñan—Sede Nacional. Thus, we seek to contribute to a better understanding of the role played by this settlement in the Inca administration of the Mantaro region, tracking the ways in which the links between the state elite and the conquered groups were set up.

Peraza Lope, Carlos [26] see Masson, Marilyn

Perdikaris, Sophia [100] see Bain, Allison

Perdikaris, Sophia (Human Ecodynamics Research Center CUNY), Allison Bain (Universite Laval, Quebec, Canada), Sandrine Grouard (Archéozoologie, archéobotanique : Sociétés (UMR 72), Naomi Sykes (Department of Archaeology, Univ. of Nottingham) and Stephan Noel (Universite Laval, Quebec, Canada)

[100] *One Island, Two Stories: Tradition, Ritual and Identity in Barbuda, West Indies*

Barbuda, the small sister island to Antigua, provides a unique geographically bound island context for the study of human-environmental interactions over the last 6,000 years. Today, Barbuda's national animal is the fallow deer, *Dama dama dama*, a species that is native to a small area of Anatolia but that has been transported around the world by people. According to historical accounts, fallow deer were imported to Barbuda, from England, by the Codrington family, the island's primary leaseholders during the Colonial Period, who sought to establish both a British colony and lifestyle upon the island. In addition to fallow deer a number of other species were imported such as chickens, turkeys, horses, cats, donkeys, etc. While colonial powers were replicating the idea of home in the British perspective, archaeological evidence and current island practices suggest enslaved peoples used both local and introduced species. The subsistence, tradition and identity of both peoples shaped the Barbuda and Barbudans of today and will be investigated through the analysis of faunal remains from relevant sites.

Perea, Ema (Pontifical Catholic University of Peru) and Luis Muro (Stanford University)

[206] *Study of the Construction Sequence of a Moche Ceremonial Mound in Northern Peru: Huaca La Capilla—San José de Moro*

For two decades, archaeological research in the Moche site of San José de Moro, located in the valley of Jequetepeque northern coast of Peru, have focused on exploring the ceremonial nature of the site from the study of funerary and feasts contexts. However, there are still many unresolved questions about the ritual practices, where they were made and what its frequency was. That is why, since 2012, new explorations started at a monumental construction, in order to understand the role and function of these structures in relation to the widely documented funerary and ritual features of SJM. This poster will present the preliminary results of research conducted at the mound called Huaca La Capilla. We will provide an approach to the construction sequence from data obtained on three consecutive excavation units located on the eastern slope of the mound. The analysis was conducted from architectural surveys, and the material recovered during excavations have allowed us, temporarily, to place the structure in relation to the long and continuous occupation of SJM, outlining a preliminary constructive sequence characterized by intense occupation, and among others, contribute to determine the relationship of this with the most representative burials from the site.

Pereira, Carla (Texas A&M University)

[145] *Tektaş Burnu: The Process of Rendering a Period-Accurate Model of a Classical Greek Shipwreck*

During the summer of 1996, the Institute of Nautical Archaeology (INA) discovered a shipwreck off the coast at Tektaş Burnu, Turkey. This shipwreck, now known as Tektaş Burnu, is a classical Greek ship from the 5th century BCE and was excavated between 1999–2001. The ship was found to carry a cargo of wine in approximately 200 amphorae which may have been made at nearby Erythrae, pine tar, pottery, and other amphorae. The ship remains include a pair of marble opthalmoi and lead-filled anchor stocks. The ship is currently dated around 440–425 B.C.E., and is one of the only Classical shipwrecks to be fully excavated in Aegean waters and thus lays claim to a certain importance.

This project seeks to take the findings from the excavation, along with what is known or suggested about shipping in this era, and use it to digitally render a model of what the Tektaş Burnu ship looked like before she sank using RHINO digital modeling software. Furthermore, with the aid of the original notes and maps of where the cargo was scattered, to render an accurate reconstruction of how and where it was stored on board.

Pereira, Gregory [179] see Medina-González, Isabel

Peres, Tanya [9] see Walker, Renee

Peres, Tanya (Florida State University) and Theresa Schober (University of Florida)

[133] *Making Mounds Out of Midden: A Behavioural Analysis*

The contents of shell-bearing sites are routinely used to make inferences regarding resource availability, subsistence practices, technology, and as proxies for past environments. Variability in the genesis of shell matrix within an archaeological site and the cultural context of its use and reuse can introduce bias into these interpretations. The authors previously developed a model of shell matrices inferred as midden, mound, and feasting deposits based on visual characteristics, artifact profiles, and radiocarbon dating. The present study refines and broadens this model through additional analyses and tests its efficacy against shell deposition sequences at a temporally and geographically unrelated archaeological site. It is further demonstrated that identification of matrix type is categorically possible and a fundamental first step before interpretations of shell matrix as proxy for environmental or cultural conditions can be made.

Peresolak, Katherine (Indiana University of Pennsylvania) and Joe Baker (Pennsylvania Department of Transportation)

[208] *The PHAST Way: The PennDOT Highway Archaeological Survey Team*

Since 2010, Indiana University of Pennsylvania (IUP) and the Pennsylvania Department of Transportation (PennDOT) have cooperated in the implementation of the PHAST program. PHAST is both a small, in-house transportation archaeology program and a professional development-apprenticeship program. The team is supervised by a PennDOT staff archaeologist and is composed of a graduate student Field Director and student intern field technicians. PHAST is deployed on small to mid-sized highway archaeology projects state-wide during the summer months. The program involves extensive and intensive professional training, and affords the participants professional experience they would be hard pressed to get anywhere else. It has also saved the Commonwealth's taxpayers literally hundreds of thousands of dollars, placed almost all of its alumni in private and public sector jobs, and successfully completed dozens of projects from initial project scoping to the production of final reports. PHAST is a model for agency and university partnership, for professional development in CRM archaeology, and for the effective and efficient management of heritage resources.

Pereyra Domingorena, Lucas [57] see Lazzari, Marisa

Perez, Daniel and Jon Carroll

[199] *Reconstructing the History of Archaeological Research at Tel Lachish*

Reconstructing the history of archaeological research at Tel Lachish, an archaeological site in southern Israel, has proven to be a challenging task. The need to synthesize large volumes of data produced over decades of research has resulted in the creation of a spatial database using Geographic Information Systems (GIS) technology. This paper touches on the data collection of the previous three expeditions to Tel Lachish, but primarily discusses current data collection methods, as well as successes and challenges in establishing and maintaining historical excavation data for the current expedition to the site, The Fourth Expedition to Lachish.

Perez, Ventura (University of Massachusetts Amherst)

[215] *Discussant*

Pérez, Luz [122] see Bernal, Marcela

Pérez Chávez, Thania (UNAM)

[136] *Las representaciones cerámicas de cánidos en la costa del Golfo: consideraciones metodológicas para su estudio.*

De acuerdo con las investigaciones arqueozoológicas, se tiene registro de tres especies de cánidos que convivieron con el hombre prehispánico en Mesoamérica: el lobo (*Canis lupus baileyi*), el coyote (*Canis latrans*) y el perro (*Canis lupus familiaris*); la importancia de su convivencia se ve reflejada en diversas representaciones arqueológicas de cánidos. En la región de la costa del Golfo, particularmente en el actual estado de Veracruz, se ha registrado la presencia de representaciones de cánidos con particularidades estilísticas propias de la región; sin embargo, no se han realizado investigaciones formales que permitan entender el papel y la importancia de los cánidos en estas sociedades.

En esta presentación se discutirán los principales problemas metodológicos relacionados con el estudio de las representaciones cerámicas de cánidos: el registro arqueológico, su análisis y las propuestas interpretativas, tomando como ejemplo el caso de las figurillas procedentes de la costa del Golfo que se albergan en el Museo de Antropología de Xalapa, Veracruz.

Pérez Iglesias, Lourdes (MSc., Investigadora Auxiliar)

[222] *Archaeozoology Contributions to the Studies of the Anthropology of Food through the Study of Two Archaeological Contexts of Early Hispanic—Indigenous Interaction in the Northeast of Cuban*

The study of bone modifications in archaeology becomes an important source of information for understanding aspects of food anthropology and extinct human groups, as well as it improves the knowledge of these aspects in poorly documented historical stages. This applies to the first moments of Spanish colonization in the north of Holguín. This paper includes elements of the exploitation of faunal resources in two marked Indo-Hispanic archaeological contexts in northeastern Cuba: Chorro de Maita and Alcala. Special emphasis is made in the study of bone modifications in Euro-Asian fauna because of anthropic actions, offering an anthropological approach to the archaeozoological studies

Perez Rodriguez, Veronica [169] see Minc, Leah

Perez Rodriguez, Veronica (University at Albany, SUNY)

[169] *Cerro Jazmín and its Urbanism in Context*

In this presentation I provide context for the papers that follow in this session devoted to the Cerro Jazmín Archaeological Project (CJAP). In the last eight years, CJAP members have investigated the urban societies that developed at this Formative and Postclassic hilltop city in the Mixteca Alta region of Oaxaca, México. Investigations have so far focused on the layout and regional function of the city, the timing of its abandonment and later reoccupation, the details of domestic life in the city, mortuary practices, monumental construction, terraces, and the immediate environmental impact of the city's growth, abandonment, reoccupation, and ultimate demise. Emerging evidence suggests that the centuries that followed the first establishment of urban society

were marked by the use of diverse sociopolitical strategies aimed at solidifying the status of the city and its rulership, while also building cohesion within its population. Our understanding of Cerro Jazmín is discussed in relation to its immediate regional peers and the possible interactions that took place with other polities beyond the Mixteca. Finally, recently obtained chronological data are presented to clarify the city's complex history of occupation.

[169] *Chair*

Pérez Rodríguez, Verónica [169] see Medellín Martínez, Christian

Pérez-Crespo, Víctor Adrián [16] see Arroyo-Cabral, Joaquín

Pérez-Roldán, Gilberto (Universidad Autónoma de San Luis Potosí) and M. Fabiola Torres-Estévez (Escuela Nacional de Antropología e Historia)
[169] *El aprovechamiento del recurso faunístico en el Cerro Jazmín, Oaxaca.*

Para muchas comunidades prehispánicas, la fauna formó parte de la alimentación y en ocasiones en la elaboración de objetos. En esta investigación se abordarán las especies tanto de invertebrados como vertebrados, destacando los siguientes grupos: *Pleuroploca* sp., *Pintada mazatlanica*, *Chama* sp., entre otras especies. En el caso de los vertebrados: *Ranas* sp., *Meleagris gallopavo*, *Sylvilagus* sp., *Lepus* sp., *Canis familiaris*, *Odocoileus virginianus*, entre otros. En este asentamiento también hallaron objetos trabajados en piezas duras de animales como pendientes, incrustaciones, punzones, agujas, entre otros. Además, se tienen evidencias del trabajo de la manufactura de estas piezas, por lo que se puede destacar algunas áreas de trabajo denominado como talleres para concha y hueso

Perkins, Tyler [112] see Thomas, Jonathan

Perlingieri, Cinzia [261] see Ashley, Michael

Peroni, Nivaldo [135] see Machado, Juliana

Perrault, Stephanie [265] see Greenlee, Diana

Perreault, Charles [69] see Brantingham, P. Jeffrey

Perri, Angela (Max Planck Institute for Evolutionary Anthropology)
[176] *Chair*

Perry, Megan and Anna Osterholtz (UNLV)

[116] *Mingled Bones, Mingled Bodies: Primary and Commingled Burials at Nabataean Petra, Jordan*

Although bioarchaeologists have recently developed best practices for the analysis of commingled samples, few scholars have theorized the significance of communal, commingled burial. In many cases, the practice of commingling skeletal remains is but one possible variant in the mortuary process. Numerous societies, including the Nabataeans at Petra, utilize collective burial in addition to primary inhumation within the overall mortuary program. The actual practice of commingling, such as when and why it is considered an option in mortuary practice, who are the actors and participants creating the assemblage, and how the physical body is perceived after death involves broader concepts of personhood, identity, embodiment, and commemoration in ancient societies. In this case, exploring this intimate act of postmortem body manipulation, along with other elements of the mortuary realm, can build upon the scant knowledge regarding Nabataean identity. These perspectives move beyond perceiving the body as a deceased individual and biological object to a socially-produced artifact. In addition, it considers commingled remains not as a bioarchaeological "problem" but as a context worthy of rigorous methodology within a theoretical construct.

Perry, Megan [189] see Sussman, Emily

Perry Sampson, Christina [6] see Austin, Robert

Pestle, William (University of Miami)

[50] *The Burials of Tibes, Reconsidered*

The 1970s Tibes excavations of the Sociedad Guaynía unearthed the remains of well over one hundred individuals from various portions of what is currently understood to be the earliest ceremonial center in the Caribbean. Despite attempts to avoid burials, more recent (and ongoing) excavations by the Proyecto Arqueológico del Centro Ceremonial Indígena de Tibes have increased this number to a modest degree. Taken together, the resulting corpus of bioarchaeological material represents one of the largest samples of skeletal material from any prehistoric Caribbean context. Over the past two decades, the skeletal remains from Tibes have been the subject of a variety of analyses (osteological and archaeometric), the results of which are reconsidered here in light of new contextual data and more recently developed understandings of the site's geological and cultural history. Particular attention will be paid to the results of stable and radiogenic isotope studies of these materials as constrained by data resulting from a rigorous program of radiometric dating.

Pestle, William [50] see Curet, L.

Peteet, Dorothy [85] see Gill, Lucy

Peters, Ann [63] see Thompson, Katlynn

Peters, Ann (University of Pennsylvania Museum)

[172] *Color Patterns and Aspects of Significance in the Paracas Necropolis*

Anne Paul (1998) observed that the Paracas Necropolis embroiderers seem to explore all possible color repeat patterns in their mantle design. At the same time, a few dominant color combinations recur throughout the assemblage.

Like speech, color is a system of difference, hues perceived relationally through contrast with those adjacent. Dyed color is produced by chemical processes on natural fiber with pre-existing tones, and changes over time in diverse environmental conditions. These factors complicate color typology for archaeological textiles. A relational approach aids in defining dominant color fields and combinations. The range and diversity of hues linked to techniques and habitual practices are analyzed as aspects of style, which may co-vary with other technical and design features. Motivated uses of certain colors appear to reference features of natural entities and systems of conventional meaning.

The range and intensity of dyed hues on cotton or camelid fiber have been attributed to improving dye technologies, a modernist theory thrown into doubt by expanded artifact samples with better provenience data. Distribution of color spectra and visually dominant combinations among mortuary assemblages suggests association with the social identity of the deceased, or ancestral personage, as well as the contributors and producers of different textiles.

Peterson, Kristi (Florida State University)

[20] *Presentation and Representation: Ixiptla and the Material Agency of the Sculptural Image*

Devotional sculptures and their attendant ritual interactions allow for pointed critical engagement with the very nature of images, both formally and in the intersection of art and sacra. To that end, this paper will explore the manner by which ixiptla (lit. representation), a type of central Mexican cult effigy, functioned to shape conceptions of space, place, and cultural identity in the Postclassic Period. By investigating their position within the visual milieu, I posit that, through their material agency, ixiptla were crucial in the formation of the aforementioned social systems in pre-Columbian central Mexico. This paper further argues that sacred images are, as a class of representation, indices of collective memory and nostalgia through the mythic narratives inscribed upon the objects themselves and their usage. They in turn form the visual rhetoric that is illustrative, and formative, of the construction of space, place, and identity. This paper will specifically address the manner in which these images defined the idea of place, primarily through their position, movement within, and integration with both the physical and cultural landscape. In the manner of a community presenting itself to itself, they both display the overarching cultural matrix as well as participate in its formation.

[20] *Chair*

Peterson, Staffan (Indiana University - Bloomington), Dru McGill (Indiana University) and Elizabeth Watts Malouchos (Indiana University)

[137] *Spatial, Architectural, and Economic Dimensions of Neighborhoods: A Comparison of Three Large Mississippian Sites in Indiana*

The vast majority of Mississippian research in southwestern Indiana has focused on Angel Mounds, specifically the extensive excavations of the Eastern Village and analysis of decorated ceramics. Recently, a site wide magnetometry survey and large scale analysis of Mississippian Plain Pottery from the Angel site were completed by the first and second author of this paper. Additionally, recent magnetometry and excavations at the Stephan-Steinkamp site, the second largest Angel phase site in the region, were undertaken by the third author. Comparisons between Angel, Stephan-Steinkamp, and the nearby Southwind sites suggest certain architectural styles, structural alignments, and monumental constructions created social landscapes that served to integrate local, regional, and supraregional Mississippian communities. Results from these research projects also suggest the common existence of intrasite social organizations (termed neighborhoods), manifested in both spatial propinquity and everyday material practices. In this paper, we will discuss neighborhoods through analyses of architecture, ceramic traditions, communities of practice, and individual styles, and argue for the importance of neighborhood-level research as a potential comparative scale of data relevant to studies of intra-site diversity, domestic economy, power, and other theories of Mississippian society previously focused on the whole site or regional levels.

Peterson, Christian (University of Hawai'i at Manoa) and Robert Drennan (University of Pittsburgh)

[171] *Letting the Gini Out of the Bottle: Hazards of Measuring Inequality Archaeologically*

Since the 1980s, archaeologists have measured economic inequality by borrowing the Gini index from economics, and applying it to the archaeological record in various ways. Burial assemblages were the earliest targets, and more recent efforts have expanded to house sizes, areas of agricultural fields, and household possessions. Each of these sources provides potentially enlightening information about the distribution of wealth within an ancient community. Each source has its advantages and disadvantages, and none represents the totality of household wealth in anything like the way family net worth or annual income can be measured with modern or historical data. The Gini index's reliance on a distribution of proportions can lead to especially misleading results when very different cultural contexts are compared. In some cases, wealth inequality may not even be the most persuasive interpretation of the patterns observed. The most productive archaeological strategy would aim to refine the ways in which available sources can be used, and then to use as many as possible, playing them off against each other for maximum insight. This paper discusses some of the issues to be more thoroughly thought through and experimented with to make Gini indices calculated from archaeological data more convincing.

Peterson, Staffan [208] see MacDonald, Douglas

Peterson, Elizabeth (Simon Fraser University)

[269] *An Ethnoarchaeological Approach to Exploring the Development of Hideworking Traditions in Ethiopia*

Presented are the results of an ethnoarchaeological study of hide working traditions among the Wolayta peoples of southern Ethiopia. This research is part of a larger study that aims at tracing the development of social complexity/inequality occurring during the pre-Aksumite period (>800–450 B.C.E.) in eastern Tigray through studying the emergence of craft specialization of hideworking traditions. The processing and trading of hides has a long history in Ethiopia. The export and local trading of cattle hide has continued as an important aspect of the Ethiopian economy with possible roots within the early development of the Aksumite state. The ethnoarchaeological study focuses on documenting aspects of sociocultural and economic behavior related to hide processing activities that are likely to leave identifiable residues in the archaeological record. Drawing analogies gained from living communities with possible links to the pre-Aksumite/Aksumite populations provides an excellent opportunity to create new understandings of the behavioral adaptations reflected within the

material record.

Petraglia, Michael

[170] *Climate Change and Out of Africa Dispersals*

International, interdisciplinary fieldwork is at the core of Lawrence Straus' long-term archaeological research. Inspired by such an approach since my involvement with Straus' excavations at the Abri Dufauré in southwest France, I have been conducting field work in the Arabian peninsula, which aims to understand the relationship between climate change and human demography across the Pleistocene. Satellite images and GIS studies have effectively demonstrated that there were wet phases in this arid zone, with clear signs of rivers and lakes. Interdisciplinary fieldwork has established the presence of freshwater lakes, and the recovery of a range of fossils, including elephant and hippo, signals deep and permanent water bodies in areas that are now hyper-arid. Systematic surveys and excavations have identified a range of new archaeological sites, including Lower, Middle and Late Palaeolithic localities, together with Epi-Palaeolithic and Neolithic occurrences. The abundance of terrestrial archaeological sites of every period demonstrates that human expansions outside Africa were not confined to coastal zones, as is usually assumed. Our studies reveal an intimate link between wet and dry climatic phases and human expansions and contractions, which is of some importance in assessing Out of Africa dispersals, including the movement of *Homo sapiens* into Eurasia.

[22] *Discussant*

Petraglia, Michael [295] see Roberts, Patrick

Pettigrew, Devin and Justin Garnett (University of Missouri–Kansas City)

[40] *Ancient Projectile Weapons for Teaching and Public Outreach*

Children and adults often glaze over during abstruse discussions of the past, yet most are instantly engaged and excited on witnessing a flexible dart launched with an atlatl, or a hunting boomerang whirling towards a target. Most will try their hands at these weapons with enthusiasm. Today these are curious, antiquated devices, however, they were once the battle and hunting rifles of their day, and using them provides us with some sense of what it was like to be an ancient hunter or warrior, however removed from the direct experience of those people our own may be. When employed safely, and with skill by a professional demonstrator, these weapons can ground students and public in a direct, physical experience that creates strong memories, demonstrates the creativity and skill of ancient peoples, and opens students to more abstruse discussions of the past. Several years making, practicing with, and demonstrating ancient projectile weapons to the public provides a number of worthwhile insights.

Pevny, Charlotte [218] see Jennings, Thomas

Pezzotti, Nicole [6] see Green, Jennifer

Phelps, Danielle (University of Arizona) and Ugo Fusco (La Sapienza, Rome)

[103] *The Analysis of Late Antiquity (c. 4th to 6th century A.D.) Human Remains from Veii-Campetti, Italy*

Veii was a prominent ancient Etruscan city, which eventually fell to Roman rule in 396 BC. After its fall, Veii was abandoned and then turned into a municipality during the rule of Augustus. Within the site of Veii, is the Campetti complex south-west, which houses several different structures. In the earlier periods of occupation (circa the late seventh to fourth century BC), the archaeological area functioned as an urban sanctuary, in which water played a major role. When Augustus turned it into a municipality, the site functioned more as a public space where baths and cisterns were built. On the many water-related structures it is interpreted as a thermal, therapeutic and religious complex. By Late Antiquity (circa fourth to sixth century A.D.), the site had lost its importance as a bathing complex and water cults and transitioned into a more rural occupied area. In this later period (circa fourth to sixth century A.D.) of occupation a cistern was excavated which held many layers; one of which contained the remains of sixteen individuals. This paper will report the bioarchaeological analysis of the human remains recovered from the cistern and provide a possible explanation for the deposition of human remains.

Phelps, Danielle [236] see Burham, Melissa

Philippe, Nondédéo [96] see Cyril, Castanet

Phillips, Lori [148] see Hawthorne, Paige

Phillips, Lori (Washington State University), Erin Thornton (Washington State University) and Carlos Peraza Lope (Centro Regional de Yucatan, INAH)

[235] *Maya Turkey Management and Domestication at Mayapan*

It has been largely assumed within Maya archaeological research that the native ocellated turkey (*Meleagris ocellata*) was consumed but not managed, and the domesticated Mexican turkey (*Meleagris gallopavo*) wasn't introduced to the Maya region until 1000–1500 A.D. Recent investigations have begun to question these assumptions and our research aims to further illuminate this complex topic. Through morphometric and stable isotope analyses of zooarchaeological remains of both species, we investigated the possible management of ocellated turkeys and the timeframe of Mexican turkey introduction at the Postclassic site of Mayapan. Throughout the study, particular attention was paid to differences in turkey remains associated with elite and non-elite, and domestic and ritual structures, to explore how wild and managed turkey populations were used and potentially managed in ancient Maya society.

Phillips, Paige

[237] *A Comparison of Three Chemical Methods for Phosphorus Activity Area Analysis*

This research examines three different analytical methods used in the archaeological studies of soil chemistry for the purpose of uncovering human activities at archaeological sites. The samples used come from a prehispanic urban center at the Formative period site of Tlalancaleca (800 B.C.–A.D. 100), located in Puebla, México. Soil samples from Tlalancaleca were analyzed using inductively coupled plasma-optical emission spectrometry (ICP-OES), Mehlich 3 soil phosphorus colorimetry, and portable X-ray fluorescence (pXRF) spectrometry. The comparison examines the concentrations of phosphorus in soils, a highly indicative element of human activities. In this comparison of methods, ICP-OES was found to be the most comprehensive, precise, and accurate method to use, while pXRF and Mehlich colorimetry were found to show differing information with regards to available and natural concentrations of phosphorus.

Phillips, Erin (Coastal Environments Inc.)

[240] *Evidence of Heirloom at Moundville*

This paper examines evidence of heirloom at Moundville, a major Mississippian center located in west central Alabama. This evidence was discovered while analyzing pottery engraved in Moundville's Hemphill style. The Hemphill Style (ca. A.D. 1325–1450) is Moundville's local representational art style including such motifs as winged serpents, raptors, crested birds, paired tails, hand and eye designs, scalps, skulls, and forearm bones.

[240] *Chair*

Phipps, Elena

[172] *Nuance, Brilliance and Sheen: Textile color qualities in the Andean World*

Andean textile artists transformed fibers and dyes from nature to create complex color palettes attuned to the aesthetic of their time and place. Creating unique qualities not only of value and hue, qualities of color—in nuance shades, degree of sheen and brilliance—Andean dyers, spinners and weavers built a vocabulary of color that contributed to the meaning and value of textiles in their social, political and creative context. From Chavin religious and supernatural figures created through working pigment into the cotton yarns to form the designs, the widely polychromed Paracas embroideries that use color range as well as sequencing to convey meaning, to Inca blood-red garments and Aymara 18th century Tornesol mantles with high sheen and silk-like qualities with their related lloque effects, all represent aspects of a long and creative tradition. This tradition, viewed as a history of materiality of color and its associated properties will be the subject of this presentation.

Picin, Andrea (Friedrich Schiller University of Jena)

[211] *Technological adaptation and the emergence of Levallois in Central Europe: new insight from Markkleeberg and Zwackau open-air sites*

The introduction of Levallois method in Europe is considered the technological innovation that marked the beginning of the Middle Paleolithic. In north-central Europe, the early evidences of this new concept of flake production are dated to the late MIS 9/ early MIS 8, a period in which were testified a deterioration of the climatic condition, a change from forested to tundra -cold steppe vegetation and the dispersal of the “Mammuthus–Coelodonta” faunal complex from the arctic territories. This paper aims to contribute with new data to the current debate, by exploring the lithic assemblages of Markkleeberg and Zwackau open-air sites (Germany). The technological analysis reveals the introduction of Levallois technologies in the modalities recurrent unidirectional and preferential. This modification in the hunter-gatherers technical behavior is interpreted as a technological adaptation in response to the new faunal complex, composed of seasonal migratory animals.

Picin, Andrea [278] see Rosell, Jordi

Pierce, Daniel (University of Missouri-Columbia)

[179] *Finding Class from the Glass: Obsidian source as a costly signal*

Obsidian is abundant at nearly every Post-Classic Mesoamerican site. The obsidian typically is derived from multiple sources, including distant, “costly” sources. Given that the obsidians' utility is similar regardless of source, one possible explanation for such “wasteful” consumption uses costly signaling theory. In this model, behavioral displays indicate a hidden quality. Here, use of distant obsidians reflects status by demonstrating access to trade networks and the ability to absorb the extra costs of distant trade. However, for a signal to be received, the cost must be readily visible, which may not be the case with obsidian given its uniform color and texture. In this experimental project, I test if observers can visually differentiate obsidian sources. Using 30 previously sourced obsidian blade and flake fragments from the Post-classic site of San Felipe Aztatán, participants with no previous training sorted the artifacts into distinct source groups. If participants successfully identify source groups, then people in the past could do the same. I found the average success rate was 92.4 percent for all participants. These results confirm that obsidian source can be used as a costly signal. Ultimately, this may help to explain why sources were used differentially by people in the past.

Pietarila, Jennifer [29] see Casserino, Christopher

Pigott, Michelle (University of West Florida)

[213] *The Apalachee in a Cultural Borderlands: A Discussion of Hybridized Ceramic Practice in the 18th century*

By the 18th century the Central Gulf Coast of North America was a complex of cultural borderlands, a result of constant Native American migrations and violent European power struggles. The Apalachee, a group of Floridian Indians, was one of many groups caught up in the rapid changes of culture contact. After the Spanish mission system inhabited by the Apalachee disintegrated, they dispersed across the southeast, settling in small groups among other splintered Indian nations. As the Apalachee inhabited the borderlands of the central Gulf Coast, their ceramic practice changed, influenced by cultural history, new geographic locations and changing social networks. This paper explores the nature of cultural evolution the Apalachee experienced through an examination of the ceramics they left behind in two 18th century communities along the Gulf Coast, as well as the ancestral Apalachee homeland of San Luis and the Creek trade town of Fusihatchee.

Pike, Matthew [111] see Flood, John

Pike, Matthew (Department of Anthropology, Purdue University), Jeremy J. Wilson (Department of Anthropology, Indiana University - P), G. William Monaghan (Indiana Geological Survey, Indiana University - BI) and Edward W. Herrmann (Department of Geological Sciences, Indiana

Univers)**[285]** *Lawrenz Rising: Preliminary Assessment of a Site Development Chronology for a Mississippian Village in West-Central Illinois*

Recent investigations at Lawrenz Gun Club (11Cs4), a palisaded Mississippian village and earthwork complex in the central Illinois River valley, highlight the importance of integrating landscape-scaled geophysical survey with site formation processes to develop chronologies derived from diverse archaeological and geoarchaeological investigations. A comprehensive geophysical survey of the fortified village complex and surrounding landscape revealed extensive habitation beyond the site palisade. The "habitation" magnetic anomalies outside the village walls had multiple spectral and spatial forms—excavations confirmed them as structures. Radiocarbon ages from structures inside and outside the community's wall, combined with those from palisade excavations and GeoProbe cores of the landform and mounds, form the basis of a comprehensive chronology of site development.

The extended habitation zones at Lawrenz can be explained using multiple models of site development and coalescence. By targeting spectrally and spatially diverse magnetic anomalies for excavation, we assess the relative likelihood of certain site formation models over others, including what role warfare played in construction of and population aggregation within the site's palisades. As the largest site in the valley, the development processes at Lawrenz have implications for the regional organization of labor in response to changing social dynamics and increasing warfare after A.D. 1200.

Pilaar Birch, Suzanne (University of Georgia)**[296]** *"From the Aegean to the Adriatic: Exploring the Neolithization of Islands"*

Frameworks for understanding Neolithization have increasingly recognized the complex and multifaceted nature of the spread of domesticates from Southwest Asia into Europe. But how do these factors interplay in unique island settings as compared to the continental scale? This paper takes a comparative approach using sites located on islands from the Aegean and the Adriatic to address changing subsistence and herd management between 10,000–7,000 B.P. Based on zooarchaeological and biogeochemical evidence, I explore differences between island and mainland diet and mobility, and consider a number of markers for constraints such as lack of water, land, and available biomass. After defining the early Holocene archaeological context and its implications for initial Neolithization, I discuss evidence for patterns of specialization and intensification of livestock exploitation as well as the utilization of wild resources throughout the Neolithic in response to rising populations throughout the period. Located along a "crossroads" and presenting distinct environmental challenges, the islands of both the Aegean and the Adriatic are ideally situated for investigating human ecodynamics at this pivotal transition.

Piliciauskas, Gytis [134] see Dupras, Tosha

Piliciauskiene, Giedre [134] see Dupras, Tosha

Pilles, Peter**[165]** *Honanki and the Save America's Treasures Project: Partnerships in Preservation, Research, and Interpretation*

Honanki is a 13th century, ca. 60 room cliff dwelling in the scenic Red Rock country near Sedona, Arizona. It has been a popular attraction to scientists and tourists ever since it was first reported by Jesse Walter Fewkes in 1895. Over the years, time and people had caused considerable disturbance to the site and damage was accelerating as Sedona became an ever-more popular recreational destination. To deal with these problems, the Coconino National Forest applied for a grant from the newly created Save America's Treasures Grant Program in 1998. It was one of the first projects approved by the program, with the objectives to document the sites' architecture and abundant pictographs, stabilize walls that were in danger of collapsing, construct trails and other infrastructure, and to provide interpretation for visitors. This presentation will discuss how the Forest was able to leverage the \$93,400 dollars of the grant into a \$220,758 project through the use of volunteers and donations. Today, over 22,000 people a year visit the site, thanks to the power of partnerships.

Pilles, Jr, Peter J. [258] see Hays-Gilpin, Kelley

Pilloud, Marin, Scott D. Haddow (Stanford Archaeology Center, Stanford University), Christopher J. Knüsel (De la Préhistoire à l'Actuel: Culture, Environnement) and Clark Spencer Larsen (Department of Anthropology, The Ohio State University)**[215]** *Memory and Mortuary Practice in Neolithic Anatolia*

Social memory has been argued to be a key component in the formation of the large Neolithic village site of Çatalhöyük, Turkey. This assertion has focused on daily practice centered within the house (Hodder and Cessford 2004), and may have extended to more architecturally elaborate houses as a central repository for memory and symbolism (Hodder and Pels 2010). Surrounding this discussion of social memory, there has been less focus on human burials; particularly on the treatment of human remains for interment.

Recent research within Çatalhöyük has begun to focus more intensively on mortuary practice, particularly the processing of human remains before, during, and after interment. The peoples of Çatalhöyük had an intimate association with the deceased and employed practices which included skull retrieval, skull and limb removal, postmortem defleshing, and the creation of plastered skulls. Such practices would have played an important role in social memory; providing a corporeal means of connecting with the dead and incorporating these practices and remains physically within the home. We argue that the postmortem processing of remains in conjunction with other daily practices centered on the house all served to reinforce social structure and practice, and ultimately influenced the realization of Çatalhöyük.

Pinares, Jorge [76] see Retamal, Rodrigo

Pinilla, José [207] see Hurtubise, Jenna

Pink, Christine (Metropolitan State University of Denver), Danielle Kurin (University of California, Santa Barbara) and Matthew Boulanger (University of Missouri Columbia)**[91]** *Elemental Analysis of Chanka Pottery from Wari-era and Post-collapse Settlements using Instrumental Neutron Activation Analysis*

The Chanka were an ethnically distinct population that occupied territory in modern-day Apurimac, Peru. During the Middle Horizon (MH) (600–1000 A.D.)

Chanka sites considered in this study were situated along roads connecting three major administrative centers of the Wari Empire: Huari, Pikillacta, and Jincamocco. After the imperial collapse during the Late Intermediate Period (LIP) (1000–1476 A.D.), evidence of increased violence suggests a shift in regional social organization. This study utilized Instrumental Neutron Activation Analysis to explore elemental composition of 100 pottery samples from five Chanka sites to assess if disruptions also occurred in resource extraction, pottery production, and distribution. Results indicated two clusters in the data that are chronologically structured and likely reflect local production. Evidence of copper smelting was also revealed. Given early smelting took place in kilns, chemical signals would be expected in pottery. Relatively high levels of As, Fe, Mn, and Si associated with ore from the Andahuaylas-Yauri belt, and found in copper slag were observed in samples primarily from the Sonhuayo and Turpo sites spanning the MH through LIP. The Wari may have introduced copper smelting to the Chanka, and future research aims to elucidate the location of copper processing and the regional distribution network.

Pink, Jeremias [169] see Minc, Leah

Pink, Jeremias (Oregon State University), Ronald K. Faulseit (Field Museum) and Erica Ausel (Indiana University)

[236] *Xipe Totec and Elite Domestic Ritual in Late Classic Oaxaca, Mexico*

Imagery related to the deity Xipe Totec is well-recognized in Late Classic Zapotec iconography, most notably on a few large ceramic figures known as "Xipe Statues." Unfortunately, the majority of these objects lack detailed contextual information, limiting our ability to fully understand their ritual or ceremonial significance. Our excavation of an elite residential complex has yielded numerous Xipe statue fragments, as well as painted and incised human bones, including two drilled mandibles perhaps originally worn strung around the neck as often depicted in Zapotec Xipe statues. These objects were concentrated around an open stone platform that likely served as a ceremonial space for the terrace residents. The presence of a small ceramic kiln, over 30 figurine molds, abundant figurine fragments, and a miss-fired effigy vessel, indicate that ceremonial goods were also produced in this area. From this evidence, we conclude that both Xipe-related rituals and the production of ceremonial objects were embedded within this elite family's individual religious practice, rather than more public ceremonies held in the civic-ceremonial core of the city. We suggest that this reflects a broader shift away from collective ritual activities toward an emphasis on the renewal of individual elite lineages during the Late Classic.

Pintar, Elizabeth (Austin Comm. College), Amber Johnson (Truman State University) and Sarah Lamkin (Truman State University)

[94] *Using Binford's Frames of Reference to Model Hunter-Gatherer Mobility and Group Size in the Andean Puna*

Hunter-gatherer lifeways dominated the Salt Puna of South America for at least 5,000 years before domesticated animals and plants appear in the archaeological record. The ruggedness of the landscape (with a baseline elevation of 3,300 masl), the low ET and the distribution of resources dependent on a decreasing E-W rainfall gradient surely had an impact on prehistoric landscape use and mobility of ancient hunter-gatherers. In this poster we follow Binford (2001) in arguing there is a link between environmental variables and hunter-gatherer organization. We use world climatic data to calculate an environmental and hunter-gatherer frame of reference that allows us to create a set of expectations regarding past hunter-gatherers in this remote high-elevation desert. We specifically develop expectations for archaeological hunter-gatherer mobility in terms of number of residential camp moves per year and distance moved annually in residential moves, as well as group size and project these expected properties onto the Salt Puna. Finally, we compare these projections to a current model for hunter-gatherer mobility in the study area, to determine differences and incompatible properties.

Pinto Lima, Helena [23] see Browne Ribeiro, Anna

Pinto Lima, Helena (Museu Paraense Emilio Goeldi - Brazil)

[23] *Koriabo Ceramics of the Lower Xingu Area: A North-South Stylistic Flow?*

Cross-regional and persistent ceramic attributes/styles may express networks of past indigenous societies. In this paper we present a characterization and the general context of a previously unknown ceramic complex at the mouth of the Xingu River area, Gurupá/Pará/Brazil. We discuss similarities and distinctions of these materials compared to other ceramic complexes. In a regional perspective, these ceramics show unprecedented and important data for late pre-colonial history in the lower Amazon: they share clear characteristic with the Koriabo ceramics from the Guianas and also present in Amapá state, Brazil. The chronology for the Koriabo Complex positions it in the late pre-colonial times, and some archaeologists suggest a connection with Cariban-speaking peoples. Its presence in the Xingu river raises an interesting question, suggesting a stylistic flow in north-south direction (Guianas-Amapá-Xingu). Still speculating, this southern presence of Koriabo-like ceramics could help to explain the movements of Cariban peoples in the lower Amazon. It can also help us understand the geographic and chronological frontiers that separate the Santarém and the Marajoara cultures. Although the archaeology of this region is still nascent, the confluence of Xingu/Amazon river area is very promising.

[23] *Chair*

Pio, Kayla (University of Michigan) and John Marston (Boston University)

[149] *Food Offerings and Feasting in Bronze Age Burial Contexts from the Körös Region, Hungary*

While the collection and analysis of paleoethnobotanical material is increasingly common in settlement excavations, it still remains rare in burial contexts. Botanical material from cemeteries can provide important insights into mortuary practices and associative beliefs about the afterlife for investigated populations. Charred food remains may indicate food offerings or feasting around the burial site, as well as social inequality or aspects of the deceased's personal identity. In the case of the Bronze Age cremations at Békés 103, the near-absence of preserved paleoethnobotanical material may indicate that the placement of food offerings on the pyre was not customary in the local culture, though rites involving uncharred food offerings or funerary feasts away from the burial site may have occurred. Alternatively, taphonomic processes could have affected the archaeobotanical assemblage. This study examines intra-site patterning to address this possibility as well as ritual variation within the cemetery. In addition, to aid in the interpretation of the charred seed remains that have been recovered, this study places Békés 103's paleoethnobotanical material in comparison with similar assemblages from other European burial and prehistoric settlement contexts.

Piper, Philip [134] see Eusebio, Michelle

Piperno, Dolores (Smithsonian National Museum of Natural History)

[1] *Discussant*

Pirrie, Duncan [214] see Knappett, Carl

Piscitelli, Matthew (The Field Museum)

[105] *Developing a "Mound Literacy" for the Late Archaic Norte Chico Region*

During the Late Archaic Period, dramatic cultural transformations took place along the north central coast of Peru in a region known as the Norte Chico. These changes included a transition from hunting-gathering-fishing to farming, more intense social interaction, new kinds of power relationships between leaders and respondent populations, and the construction of monumental ceremonial architecture—all hallmarks of emergent social complexity. This paper moves beyond questions of why people built monuments and temples to focus on why they built so many. In order to explain the ritual density evident in this early sacred landscape I compare the Late Archaic Norte Chico region to the Mapuche society of south central Chile, who actively constructed ceremonial mounds until the 19th century. By creating a built sacred landscape these mound-building groups forged important connections between the human and natural realms and possibly demarcated territory. Drawing parallels between the Mapuche and the Late Archaic Norte Chico region, I argue that the construction of ceremonial architecture was tied to social relationships reflected in the placement and size of the mounds, plazas, and temples distributed across the landscape. Despite a wide chronological gap, the similarities help develop a "mound literacy" for the Late Archaic Norte Chico region.

Piscitelli, Matthew [206] see Menzer, Jeremy

Pitblado, Bonnie (University of Oklahoma)

[62] *The Role of the Rocky Mountains in the Peopling of North America*

Discussion of the prehistoric peopling of the New World is as old as North American archaeology, and peopling-related debate has only intensified through the decades. Starting with the Great Plains in the 1920s, the major physiographic regions of North America have each experienced "moments in the sun," as archaeologists have researched Clovis and sometimes pre-Clovis sites in their midst. For reasons that make little sense in retrospect, the Rocky Mountains are the last major North American region to have joined the peopling conversation. Yet this paper argues that if we critically examine the most likely points of Old World, Ice-Age origin for would-be North American colonists, it is difficult to accept that the Rockies did not play a vital role in the colonization process. By virtual definition, the First Americans were "mountain people;" they lived among the mountains that blanket the northeast Asian landscape most believe spawned New World immigration. An equally mountainous (and thus, familiar) region beckoned to prospective North Americans from eastern Beringia. From there, it was an easy and logical step to populate the Rockies—and First Americans did just that.

[62] *Chair*

Pitzeel, Todd [289] see Searcy, Michael

Pittman, Lydia (New Mexico State University)

[289] *Miniature Pottery Vessels in the Mimbres Region*

This paper presents a study of Miniature Pottery vessels from the Mimbres region of the American southwest. I define these vessels as no larger than 10cm in length in any dimension. My data set includes over 150 vessels from sites in southwestern New Mexico. I will look at attributes such as painting, slip, temper, and completeness as well as depositional context to make inferences about the possible uses of these vessels in the time period that is covered. My vessels span almost 1,000 years from the start of the Georgetown Phase (A.D. 550–650) through the end of the Cliff Phase (A.D. 1300–1450). I look at variations in their attributes and contexts through time to help explain their uses. A range of explanations have recurred over the years about the Mogollon and other miniature vessels in the ancient southwest. The most prominent interpretations are that they are children's toys, older children's practice pieces, or as specialized ritual vessels of various kinds (e.g., Datura pots). My paper seeks to refine these explanations by considering how ethnographic evidence of the animacy and other uses and roles of artifacts such as pottery would contribute to interpretations of these miniature vessels.

Planella, María Teresa [57] see Falabella, Fernanda

Plekhov, Daniel (Boston University), Christopher H. Roosevelt (Director, Research Center for Anatolian Civilizati) and Christina M. Luke (Associate Professor, Department of Archaeology and)

[184] *Application of Architectural Energetics Models to the Iron Age Tumuli of Bin Tepe in Lydia, Western Turkey*

This poster presents a study that applies an architectural energetics model to around 140 monumental earthen burial mounds located in an area known as Bin Tepe (the "Thousand Mounds") in western Turkey, which served as the burial ground for Iron Age Lydian rulers and elites. Using measurements obtained from ground survey and aerial reconnaissance, volumetric figures for each of the tumuli are calculated to determine the amounts of building materials necessary to construct each tumulus. These parameters are entered into an architectural energetics model, based on similar models from other parts of the world, which assigns to each step of the construction process a time and labor cost according to available technologies and resources. The outputs of this model are given as quantitative minimum and maximum ranges for how much building material, labor power, and time would be required per mound, per mound cluster, and for all known tumuli in Bin Tepe. Such a study is a useful and necessary step to moving beyond treating tumuli as indistinguishable points on a map, towards considering them as varied and individual investments of material, labor, and time that reflect social differences in the society that constructed them.

Pleurdeau, David [22] see LEPLONGEON, Alice

Plog, Stephen [261] see Heitman, Carrie

Pluckhahn, Thomas (University South Florida) and Neill Wallis (University of Florida)

[17] *Reading between the Lines: A Contextual and Processual Approach to Social Interactions in the Woodland Period of the American Southeast through Integrated Analyses of Complicated Stamped Pottery*

Archaeologists have turned increasingly to Social Network Analysis (SNA) to visualize and understand the structure of regional social networks, but their analyses frequently sacrifice context and process for synchronic, macro-scale patterning. We compare SNA with a more contextual and processual network approach to the case of Swift Creek Complicated Stamped pottery, a ubiquitous class of material culture in the Deep South of the American Southeast during the Middle and Late Woodland periods (ca. A.D. 100 to 800). The impressions of wooden paddles carved with an array of unique designs serve like maker's marks in documenting Swift Creek vessels finished with an individual identifiable tool. By combining design data, patterns of vessel form and use, determinations of vessel provenance through NAA and petrography, and absolute dating, this research ascertains types of social interaction (migration, residential mobility, post-marital residence, and exchange) and their predominant directions and levels of intensity over time and across multiple ecological, social, and cultural contexts.

Pluckhahn, Thomas [55] see Jackson, Kendal

Plumer, Hannah (University of Sheffield)

[130] *Maya Health Through Time in Northwestern Belize*

This presentation will examine paleopathology among the ancient Maya through the analysis of the skeletal remains from three different medium Maya sites in northwestern Belize. Osteological health indicators such as trauma, porotic hyperostosis, cribra orbitalia, osteoarthritis, and various dental health issues will be assessed both within and between the three sites. The sites to be discussed are Blue Creek, Nojol Nah, and Xnoha all of which are located along the Bravo Escarpment in northwestern Belize. This area is part of the larger Three Rivers Region, of northern Belize, which was an incredible location for trade and agriculture throughout the Preclassic and Classic (250–900 A.D.) periods. The health indicators that are present at these sites will not only be examined temporally, but also through the lens of social stratification and biological sex. Due to both pH levels in the soils in the area along the escarpment, as well as burial practices, the skeletal populations of these three sites are quite well preserved, which allows for a unique look into a micro-region of the Maya. This study aims to illuminate Preclassic and Classic Maya health through the analysis of the skeletal populations of the three sites on the Bravo Escarpment.

Plunkett, Gill [95] see Armit, Ian

Pluskowski, Aleksander (Department of Archaeology, University of Reading)

[161] *Between Radicalism and Tolerance: Characterising the Rule of a Militarised Christian Theocracy in the Medieval Baltic*

The Teutonic Order, the last of the major military orders founded in the Holy Land in the twelfth century, developed a strong, centralised hierarchy once it redirected its efforts to crusading in the Baltic. After the initial period of crusading was over, its fortified monasteries were built with consistent regularity, and the Order adopted a top-down, corporate approach to controlling the conquered territories, under the leadership of the Grand Master. However, despite this centralisation, degrees of autonomy within its ranks are evident across its lands, which can be linked to the variable ecological and cultural contexts encountered by its commanders and lesser officials. The Order was able to overcome 'discrepancies' between its own castles though its supra-national network, which connected the smallest frontier outpost with regional convents and the central headquarters at Marienburg. In this respect as a colonising corporation it adapted extremely well to the environment of the eastern Baltic. However, its relationships with the indigenous population and Christian colonists were more ad hoc, and resulted in the persistence of pre-Christian religion alongside the introduced Christian infrastructure. This paper considers the evidence for this tension between regulation and toleration within a society dominated by a militarised Christian theocracy.

[161] *Chair*

Pohl, John (UCLA)

[58] *Exhibiting Cultural Context*

A continuing issue is the treatment in exhibitions of precolumbian objects as simply works of art. This is as much due to museum department compartmentalization and the dominance of design divisions who do not consider the integration of meaningful detail a priority and may even see it as disruptive to the overall design concept. Many of us are interested in developing contextualization without inhibiting the ability of art and artifacts to be appreciated for their own aesthetic merits so we have to educate ourselves as to how to do this and in so doing get curators back into the creative process of exhibition development.

[101] *Discussant*

[117] *Chair*

Pohl, Mary [230] see von Nagy, Christopher

Pohl, Mary (Florida State University), Christopher von Nagy (University of Nevada Reno), Joseph Gamble (Joseph Gamble Photography), Gabriel Lima Estudillo (Comité de Preservación del Patrimonio Cultural de) and Eliseo Padilla Gutiérrez (Universidad Nacional Autónoma de México)

[230] *What is Oxtotitlán Cave Communicating?*

Cave murals, painted in Olmec style with iconographic links to the major Gulf coast center of La Venta, appear to communicate the dynamism of interregional relationships in an era of rising urbanism. The paintings seem to evoke the evolution of hierarchical positioning among political and religious actors. They might reveal the tools for local and long-distance power building. Yet the work that has clarified the nature of Oxtotitlán Cave and its associated site of Quíotepec has extended the enigma of the murals. Dating of both the murals and carbon recovered from archaeological excavations verifies the Middle Formative chronological timeline. Mural cleaning conducted by Mexican government conservators and our own intensive photographic documentation have revealed new figural details that strengthen visual associations with La Venta's sophisticated carved stone monuments. On the other hand, other aspects of the paintings and especially the material culture coming forth from excavations in both Oxtotitlán Cave and at Quíotepec continue to be local to Guerrero with significant links to Central Mexico and much more tenuous traces of contact with the Gulf Coast. What is Oxtotitlán's message and meaning?

Poinar, Hendrik [85] see Harris, Alison

Poirier, Marcela [91] see Vaughn, Kevin

Poister, Nicholas (California State University, Los Angeles), Errol Mathias (California State University, Los Angeles), Mario Mena (California State University, Los Angeles) and James Brady (California State University, Los Angeles)

[93] *Seeking Molecular Evidence of the Ritual Function of Unslipped and Monochrome Slipped Ceramic Types at Naj Tunich, Guatemala*

A large portion of the ceramic assemblage recovered from the Maya cave site of Naj Tunich, Guatemala consists of unslipped and monochrome slipped ceramic types generally considered to be "utilitarian" or "domestic" wares. This identification is based upon type-variety analysis rather than any evidence of the actual use to which they were put. That these ceramics were deposited in conjunction with domestic activities is at odds with the widely accepted interpretation that the Maya employed caves almost exclusively for ritual purposes. There is reason to believe that these ceramics were, in fact, used as incense burners. If GC-MS analysis of absorbed residues reveals the presence of the chemical signature of copal incense, the finding will put to rest any lingering doubt as to the ritual function of the Naj Tunich ceramics.

Polanyi, Tamas (Northwestern University)

[257] *The Second Voyage of Odysseus: Tale of the Traveling Warrior of Bronze Age Europe*

Elites and the deconstruction of elite-centered perspectives of past societies have long been at the focus of archaeological approaches. In European Bronze Age research there is a revitalized interest in reconnecting diverse regions and understanding them as parts of an abstract pan-European ideological system - the warrior ethos. The primary theoretical vehicle employed in this endeavor, institutional analysis of synchronic societies, draws our attention to social and political structures created, modified and transformed from the top, chiefly by a narrow group of warrior elites. Warriors became the new "super actors" who single-handedly shape their communities and connect them into inter-regional flows of prestige goods, new and advanced technologies, and knowledge. In archaeological interpretations warrior institutions are defined, constructed and reproduced by not merely a set of signifying objects, a 'symbolic package,' uncovered mostly in burials; but by a shared life style and a common set of practices. In this paper, I attempt to complicate this rather one-dimensional understanding of local communities by employing a gender-sensitive contextual analysis of multiple cemeteries and an inter-contextual approach to (re)evaluate assumed regalia of warriors.

Politis, Gustavo [16] see Gutierrez, Maria

Polk, Michael (Commonwealth Cultural Resources Group, Inc)

[89] *Moderator*

Polkinghorne, Martin [74] see Stark, Miriam

Pollard, Joshua (University of Southampton, UK)

[132] *Discussant*

Pollard, Edward [269] see Fenn, Thomas

Polyukhovych, Yuriy [272] see Munson, Jessica

Poncelet, Eric (Kearns & West)

[60] *Reflections on Anthropology and Environment: Implications of Crumley's Holistic Approach*

One of the benefits of anthropology's four-field approach is that it invites reflecting on and applying insights, perspectives, and learnings from one field to another. Such was my experience with Carole Crumley. Although Carole was an archeologist and I was a cultural anthropologist, I asked her to serve as my faculty advisor at UNC-Chapel Hill primarily because she deeply believed in the importance of my research interest. I wanted to study multistakeholder environmental collaboration in industrialized societies. Carole's holistic approach to the complex relationship between humans and the environment is well represented by her 2001 edited volume, *New Directions in Anthropology and Environment*, of which I was a contributor. The book explored the physical and mental dimensions of the human-environment relationship, across time and cultures, and across disciplines and professions. This paper describes how my research on the cultural dimensions of collaborative environmental problem solving (as expressed through the study of partnerships among governmental, business, and environmental community stakeholders in the European Union and U.S.) and my subsequent 17 year-career as an environmental conflict resolution practitioner have been inspired by Carole's inquisitive and inclusive approach to the study of human-environment relationships.

Pool, Michael (Austin Community College)

[64] *"No Attempt Was Made to Cultivate Crops until Very Recent Times"*

Ethnographic and ethnohistoric information are significant sources of data for archaeologists in developing various models. It is a widely held belief among archaeologists that the Chiricahua Apache subsistence was based only on food foraging and raiding. This interpretation originates with Opler, the primary ethnographer for the Chiricahua Apache, who stated that "no attempt was made to cultivate crops until very recent times" and "By the time the Eastern

Chiricahua became seriously interested in cultivation they were already so often threatened, assaulted, and uprooted that it was almost futile for them to attempt to farm." Thus, the adoption of agriculture by them is seen as a reservation development (1850s and later). A number of archaeologists have accepted this interpretation.

Given the long-term relationship between archaeology and ethnographic and ethnohistorical data, it is important that such errors be corrected. This poster provides ethnohistoric documentation that suggests the Eastern Chiricahua Apache were as, or as near as, agricultural as the Western Apache are considered.

Pool, Christopher (University of Kentucky), Michael Loughlin (University of Kentucky), Manuel Melgarejo Pérez (Independent Researcher), Gabriela Montero Mejia (Universidad Veracruzana) and Kyle Mullen (University of Kentucky)

[264] *Architectural Variation in the Tres Zapotes Region*

A combined program of aerial LiDAR mapping and pedestrian survey is documenting significant intra-regional variation in prehispanic architectural plans in the Eastern Lower Papaloapan Basin of southern Veracruz, Mexico, reflecting the interplay of ecological adaptation, political integration, factionalism, and extra-regional influences. Consistent association of domestic mounds with small bajos in low-lying areas suggests intentional (as opposed to accretional) mounding and landscape modification to exploit aquatic resources. Preliminary assessments of temporal affiliation for civic-ceremonial complexes support a diachronic model in which Late Formative political affiliation expressed architecturally in the Tres Zapotes Plaza Group layout was succeeded by a proliferation of distinctive Protoclassic and Classic layouts, including Central Veracruz-inspired Standard Plans and Monumental Platforms, in the context of a fragmented political landscape. The Postclassic, in turn, witnessed the appearance of novel formal arrangements concentrated along a major east-west transportation route.

Poot, Paulina, Javier Rivas Romero (Universidad Autónoma de Campeche) and William J. Folan (Universidad Autónoma de Campeche)

[179] *The Peten Campechano: A Functional and Socioeconomic Analysis of Its Settlement Patterns*

The 1980s construction of the road to the archaeological site of Calakmul, Campeche made it necessary to record 86 sites on and alongside its trajectory and in the area around the Chumpich Lagoon down to Uxul on the Guatemalan border. The systematic location and mapping of each site and their associated cultural elements as well as flora, geology and paleoclimatology have permitted us to identify a variation in their architecture as well as settlement patterns and access to resources. In this paper, based on the classification of the sites, we were able to define their different functions within the Calakmul Regional State from the Preclassic to the Terminal Classic.

Pope, Matt [146] see Milks, Annemieke

Pope, Melody, Lynn Alex (University of Iowa, Office of the State Archaeologist) and Shirley Schermer (University of Iowa, Office of the State Archaeologist)

[266] *Stewarding Past Places into the Future—Cultural Landscapes, Byways, and Heritage Studies in Archaeological Practice*

Between 2010 and 2013 archaeologists at the University of Iowa, Office of the State Archaeologist collaborated with local communities, traditionally associated peoples, and other stakeholders in planning processes involving archaeological sites, cultural resource districts, and archaeological preserves in Iowa and Illinois. Each project built on and extended partnerships with and between Native American communities and fostered new multidisciplinary relationships between archaeologists, architects and museum specialists, all of whom contributed greatly to each projects success, exposing commonalities, tensions and complexities involved in managing cultural and heritage places and landscapes. Multidisciplinary partnerships are critical aspects of these projects, but are not without challenges and tensions. In this poster we present outcomes, challenges, successes, tensions and lessons learned along the way that will hopefully benefit others working in these diverse arenas of archaeological practice.

Pope, Matthew (UCL)

[278] *The Middle Pleistocene at La Cotte de St. Brelade, Jersey*

The important archaeological sequence of La Cotte de St. Brelade, known for both abundant lithic and faunal material recording human activity and environmental conditions over the last 200,000 years, is an exception in this key region making the site unique. La Cotte is also famous for the discovery of late Middle Pleistocene concentrations of mammoth and rhinoceros bone remains, known as 'bone-heaps' (Scott 1986). Different hypotheses have been proposed to explain the formation of these bone accumulations (Scott 1986; Smith 2015). Here we will present the first results of a full re-examination of the bone material from the Saalian deposits of La Cotte, which takes into account a taphonomic and zooarchaeological investigation, and when applicable, in relation to the spatial repartition of the remains. The results of this multi-proxy analysis allow for a deeper understanding of the process of formation and modification of the different faunal assemblages from the site; carnivore presence is extremely limited and even absent in some layers. Our analysis points toward an anthropogenic origin of the faunal assemblages from the different Saalian layers of La Cotte, including the famous heaps, and opens new ways to investigate the different possible behaviours resulting in these peculiar accumulations.

[278] *Chair*

Popelish, Linda [267] see Brown, Erin

Popelka-Filcoff, Rachel [13] see Darling, J Andrew

Popescu, Gabriel (SHESC, Arizona State University)

[146] *Living through the Last Glacial Maximum. A View from the Eastern European*

The region between the Eastern Carpathians in Romania and the Prut River in both Romania and Republic of Moldavia, knew both temperate and continental/cold climates throughout the Late Pleistocene, and still witnessed significant and rapid environmental shifts caused by global climate regimes, especially during the Last Glacial Maximum. I will examine in this poster the important interplay between technological, social, and land-use dynamics as culturally mediated responses to climate change within the periglacial zone. I will therefore combine information from excavated sites across the area between the Eastern Carpathians and the Prut River, in order to examine Upper paleolithic behavioral adaptations to the environmental shifts of the Late

Pleistocene (late MIS-3 through MIS-2). To achieve this, I will define several indexes that serve as proxies for land-use strategies and technological specialization. The expectation is that the variation in these indexes across space and through time will provide a basis for a model of Upper Paleolithic eco-dynamics. The results will allow the opportunity to evaluate if land-use patterns across this area was sufficiently flexible and resilient to environmental change to persist throughout the Late Pleistocene.

Popp, Casana [129] see Hirth, Kenneth

Porter, Benjamin (University of California, Berkeley), Stephanie Brown (University of California, Berkeley), Katie Simon (Center for Advanced Spatial Technologies, University of Vienna), Andrew Wilson (Bangor University) and Christine Markussen (University of Vienna)

[199] *Documenting an Iron Age Townscape at Busayra (Jordan) using Geophysical Survey Techniques*

Located in southwest Jordan, Busayra has long been suspected of being the capital of the Iron Age polity of Edom. British excavations in the 1970s revealed monumental buildings, fortifications, and domestic residences on Busayra's acropolis that confirms the settlement's stature as an administrative center. Despite this impressive evidence, little else is known about the town's design. In order to further investigate Busayra's sub-surface features, the authors conducted a geophysical survey project in 2014 in collaboration with the University of Arkansas' SPARC (Spatial Archaeometry Research Collaborations) program. Ground Penetrating Radar (GPR) and Magnetic Gradiometry instruments were used to survey the site's unexcavated areas and yielded interesting results including clear architectural anomalies. Notable discoveries include the identification of sub-surface monumental buildings associated with Building A, a multi-room structure believed to be associated with ritual activity. Structures that are likely domestic residences were identified east of Area C, where several houses were excavated in the 1970s. Although gradiometry is rarely employed in the region, it proved to be particularly successful at identifying new features in this survey. In addition to a discussion of upcoming sampling strategies of these identified structures, this paper will discuss the feasibility of using geophysical technologies in southwest Jordan.

[199] *Chair*

Potter, Ben (University of Alaska Fairbanks), Joshua Reuther (University of Alaska Fairbanks), Vance Holliday (University of Arizona) and Charles Holmes (University of Alaska Fairbanks)

[21] *Colonization of Northern North America: a view from Eastern Beringia*

Recent investigations at multiple well-stratified multi-component sites in interior Eastern Beringia have provided important data on late Pleistocene technology, subsistence economy, and habitat use. Our review incorporates recent multidisciplinary work at Upward Sun River, Mead, and Swan Point. We summarize these data within human ecological perspectives and derive implications for the lifeways of early Beringians. We review the biogeography and early archaeological record for the Ice Free Corridor and Northwest Coast potential migration routes and evaluate their relative viability.

Potter, Amy [100] see Bain, Allison

Poulos, Anastasia [153] see Edwards, Erin

Power, Torin (Western State Colorado University) and David M. Hyde (Western State Colorado University)

[273] *Evidence for Quarrying at Medicinal Trail, A Maya Hinterland Community in Northwestern Belize*

Excavations associated with Structure A-7, a 9 x 4 m isolated mound near Group A of the Medicinal Trail Community in northwestern Belize, have revealed evidence for the extraction of stone blocks from the limestone bedrock. The evidence for quarrying consists of rectangular scars outlining stone blocks that appear to have been in the process of being harvested. Additionally, there was an artificially created bowl-shaped depression, 2 m in diameter and approximately 1 m deep. A problematic deposit, possibly a midden, was placed inside the depression. Structure A-7 extends over the block scars and the depression. Ceramic examination suggests that there was a lot of intermixing of the deposits in the midden. Late Preclassic, Protoclassic, Early Classic, and some Late Classic ceramic types were identified in the deposit, and there does not appear to be any stratigraphic differences in the midden matrix and to determine if the deposit was a true midden, or secondary refuse dump. This paper describes the excavations and evidence of quarrying, discusses the possible meaning of the problematic deposit found in the depression.

Powis, Terry (Kennesaw State University)

[235] *Monumentality in the Middle Preclassic: The Beginnings of Public Ceremonialism at Pacbitun, Belize*

In the Middle Preclassic (900-300 BC), physical evidence of the increasing complexity of Maya society can be found in the form of monumental public architecture. However, the origins of temple building are poorly understood during this time period, especially in the Belize Valley. At the site of Pacbitun we have been exploring the initial purpose of public architecture as constructions to bring likeminded communities together for ritual, ceremonial, and/or social functions. Archaeological investigations by the Pacbitun Regional Archaeological Project (PRAP) have recently unearthed a large, radial pyramid (dubbed El Quemado) buried beneath Plaza A in the site center. El Quemado is very reminiscent of Str. E-VII-Sub at Uaxactun and our excavation of this sub-plaza temple may shed new light on the beginnings of public ceremonialism as well as on the foundation, nature, and development of the site's early social and political structure. This poster will summarize our research to date, including a look at other architectural complexes in the Belize Valley that were involved in early public activities similar to what we have identified at Pacbitun.

[109] *Discussant*

Powis, Terry [120] see Cartagena, Nicaela

Pozeilov, Yosi [121] see ONeil, Megan

Pozorski, Shelia [31] see Pozorski, Thomas

Pozorski, Shelia, Thomas Pozorski (University of Texas-Pan American), Bobbie Lovett (University of Texas-Pan American) and Rosa Marin

[31] *The Initial Period from the Perspective of the Casma Valley on the Northern Peruvian Coast*

During the Initial Period (2100–1000 B.C.), the largest platform mound in the New World was constructed at Sechin Alto site in the Casma Valley. Measuring 300 m x 250 m x 35 m tall, this mound served as the administrative center for the Sechin Alto Polity which included over a dozen sites, most with monumental architecture. Our current understanding of the Sechin Alto Polity and how it functioned comes from decades of fieldwork by other researchers and by us, and this research is ongoing. This paper takes an historic look at how our knowledge of the Initial Period unfolded within the Casma Valley by examining key turning points in the research there. These include the realization that over a dozen Casma Valley sites are Initial Period in date; the recognition that mounds could have varied functions, including secular ones; the identification of the square-room-unit architectural form as a symbol of polity authority; and the correlation of the square-room-unit module with what appears to be a power symbol within local Initial Period iconography.

Pozorski, Thomas (University of Texas-Pan American) and Shelia Pozorski (University of Texas-Pan American)

[31] *The Importance of the Initial Period in the Development of Early Peruvian Civilization*

Research over the past 50 years has demonstrated the importance of the Initial Period (2100–1000 B.C.) societies that thrived along the Peruvian coast over 3000 years ago. The Initial Period, once viewed as a mere continuation of the subsistence-oriented Late Preceramic Period (3500–2100 B.C.) with the addition of pottery, is now widely considered to be a time of dynamic cultural change, witnessing the development and maturation of many of the social, political, and economic institutions that became the bases for later Peruvian civilization. Investigations in the 1970s and 1980s along the north and central coast and at Chavin de Huantar clearly showed that the coastal mound/plaza complexes significantly predated Chavin de Huantar and served as some of the sources of inspiration for the art and architectural accomplishments of that highland site. Investigations over the past 20 years have largely confirmed the dynamic nature of Initial Period coastal societies and have demonstrated that the roots of those societies go back well into the Late Preceramic Period.

Pratt, Jordan (Texas A&M University)

[114] *A Geospatial Analysis of Northern Side-notched points in the Northern Great Basin: A Case Study from the Burns District Bureau of Land Management*

In the northern Great Basin region of eastern Oregon, little is understood about human settlement during the hot, dry middle Holocene. The only diagnostic piece of material culture which reliably dates to this period is the Northern Side-notched (NSN) projectile point, which was last studied extensively by John Fagan in 1974. The purpose of this study is to reconsider Fagan's interpretations of Altithermal occupations in the northern Great Basin—specifically whether such sites are limited to high elevations and associated with perennial springs. NSN points and associated site reports from the Burns District of the Bureau of Land Management were reviewed, and ArcGIS was utilized to analyze the geographic distribution of NSN, including in reference to obsidian sources. Ultimately, NSN were produced on both local and non-local obsidians, occur extensively across the landscape, at high and low elevations, and appear to have been associated with both perennial and ephemeral water sources. These results indicate that Altithermal occupations were more extensive than previous research indicated, and that prehistoric humans were exploiting multiple resource zones despite climatic fluctuations.

Pratt, William (Texas State University), David Brown (University of Texas at Austin) and Ryan Hechler (Tulane University)

[196] *Cochasquí under the Inka: Reassessing the Inka presence in northern Ecuador*

The archaeological site of Cochasquí exhibits some of Ecuador's largest and most ornate earthen pyramids or Tolas. With long dirt ramps and truncated steps of cangahua blocks, the Cochasquí pyramids are some of the most recognizable in the country. It was at this site that the Inka first encountered and conquered one of the great polities of the Caranqui Confederation. Sometime after its conquest by the Inka, the Spanish arrive and, by all historic accounts, the location was abandoned by 1580 leaving only a hacienda and a tambo in its place. The three other major Caranqui Confederation polities today have large cities associated with them, yet Cochasquí is still relatively uninhabited leaving behind a somewhat pristine archaeological site. What happened at this site between the arrival of the Inka and its eventual abandonment is poorly understood. While many archaeologists believe that the area was initially abandoned after the arrival of the Inka, historic and archaeological evidence suggests not only that the site was occupied until the arrival of the Spanish, but that the Inka played a large role in its final configuration.

Pratt, William [279] see Hechler, Ryan

Premo, Luke [272] see Miller-Atkins, Galen

Prendergast, Mary (St. Louis University Madrid)

[223] *Biological Exchange in the Swahili World: Archaeofaunal and Biomolecular Evidence*

The Swahili coast, stretching from Somalia to Mozambique, has a long history of engagement in western Indian Ocean trade, from at least the first century CE according to documentary evidence. One result is the widespread use of animals of Asian origin—particularly zebu cattle (*Bos indicus*) and chicken (*Gallus gallus*)—in African subsistence systems today. However, tracing these animals' arrival and spread is complicated by their osteological similarities to indigenous taxa and by poor chronological resolution, and aDNA research on these taxa is still in its infancy. One taxon that preserves well in coastal urban settlements, and can serve as a proxy for increasing maritime biological exchange, is the black rat (*Rattus rattus*). Black rats have been reported from numerous Swahili coast and inland sites, but examination of some of these remains using collagen fingerprinting (ZooMS) demonstrates that many were misidentified. Combining ZooMS, aDNA and direct radiocarbon dating, we trace the arrival of the black rat to the coast, significantly later than predicted based on other sources of information. We outline potential areas for research on the impacts of this taxon on indigenous flora and fauna and on the spread of disease.

[223] *Chair*

Prentiss, Anna (University of Montana), Thomas Foor (The University of Montana), Kristen Barnett (The University of Montana) and Matthew Walsh (The University of Montana)

[171] *Cooperation, Labor, Sharing, and Inequality in a Long-Lived Household, Bridge River Site, British Columbia*

Archaeological research at the Bridge River site, British Columbia, demonstrates that during the Bridge River 3 period (ca. 1300–1000 cal. B.P.) material wealth-based inequality developed on an inter-household basis during what appears to have been a Malthusian ceiling where populations were briefly very high and resource access weakened. While there is significant knowledge of village-wide socio-economic, demographic and political change at the site little

work has been done to gain an understanding of these processes from the standpoint of intra-household relationships. Excavations conducted in 2013 and 2014 at the deeply stratified Housepit 54 provide an opportunity to examine social change across a series of anthropogenic floors occupied in approximately 20 year intervals ca. 1200–1400 cal. B.P. We develop a multivariate statistical approach to testing models associating degree of household cooperation in labor to variability in sharing of goods and the emergence of social inequality. We expect to offer reflections on the nature of social inequality in the Mid-Fraser region along with thoughts on alternative quantitative approaches to household archaeology.

Prentiss, Anna Marie [185] see Tifental, Emilia

Prentiss, Anna [124] see Barnett, Kristen

Price, Max (Harvard University)

[75] *Introduction to Smallholders and Complex Society, with a Note on Pigs and Mesopotamia*

In this introduction, I discuss the literature on smallholders in complex societies and directions for current and future archaeological research. I attempt to answer several questions: What is a smallholder? How can we detect them in the archaeological record? How does a focus on smallholders contribute to studies of other social groups, such as classes, gender, and ethnicity? I conclude my presentation with a discussion of the role of smallholders in pig husbandry in Chalcolithic and Bronze Age Mesopotamia and how this may have brought them into conflict with the emerging state.

[75] *Chair*

Price, Gypsy (University of Florida)

[134] *Discriminating Tastes: Intra-Species Variation in Exploited Fauna at Mycenae, Greece*

This paper demonstrates how integrating isotopic analyses and more traditional zooarchaeological methods can help to bridge the gap between theory and practice. Isotopic ratios from species known to have been purposefully managed establish inter- and intra-taxonomic variation from which management practices may be inferred. These management practices reflect decision making processes enacted by producers and consumers responsible for procuring fauna for occasions of consumption. This paper presents results from faunal material recovered from the Late Bronze Age settlement of Mycenae, Greece, with an eye to elucidating faunal economies operating in disparate socio-economic sectors of the palatial settlement. Of particular interest is the lack of intra-site variation in management practices regarding consumed caprine resources, while other managed species show distinct variation between consumption contexts. These species-specific differences, while intuitive, can be hard to nail down in archaeological record. These data augment current models of faunal exchange within LBA Mycenaean palatial settlements, teasing out nuances which were previously unobservable.

Price, Max [176] see Otárola-Castillo, Erik

Price, Michael (Penn State Anthropology), Christopher Jazwa (Penn State Anthropology), Douglas Bird (Penn State Anthropology) and Rebecca Bliege Bird (Penn State Anthropology)

[180] *A Field Processing Model that Accounts for the Cost of Home Labor*

Hunter-gatherer and subsistence farmer populations frequently make decisions regarding field processing when collecting resources away from a central base. These decisions can have a profound influence on the relative abundance of items in archaeological assemblages if systematic biases exist in the propensity for particular goods to be field processed. An influential and productive framework for understanding field processing decisions is the model formulated by Metcalfe and Barlow. In this poster, we (1) describe an extension to their model that accounts for the opportunity cost of home labor, (2) discuss a graphical approach for testing the model, and (3) illustrate the approach using ethnographic observations of field processing decisions from the island of Seram in eastern Indonesia. We show that the extended model can account for otherwise unexplained deviations from the predictions of standard field processing models, and conclude that the ethnographic observations are consistent with the cost of home labor time making a significant contribution to field processing decisions. We discuss the archaeological implications of the updated model using ethnoarchaeological and archaeological case studies of shellfish field processing on the island of Mer in the Torres Strait between Australia and New Guinea and on California's northern Channel Islands.

Price, Neil (University of Uppsala)

[192] *Slavery and the Vikings: Archaeological Perspectives*

The cultures of the Viking Age in Scandinavia (A.D. c. 750–1100) were economically dependent on widespread, complex and deeply rooted systems of slavery. However, this aspect of the period was long neglected by scholars, partly due to the diluting influence of contemporary terminology. A Viking slave was a *træl*, producing the rather weaker English word 'thrall', and the nationalistic approaches to the period that dominated Viking studies far into the twentieth century often tended to subsume an unpalatable truth in their preference for a supposedly heroic past. This picture has changed considerably in recent years, and this paper introduces the steadily increasing range of archaeological evidence that we have for Viking slavery. From material culture such as shackles—themselves potentially ambiguous items—to the identification of possible slave quarters in settlements, attempts have been made to trace slave labour in the archaeological record of Viking economies, especially in key areas of production such as the manufacture of sail cloth. Possible slave burials are discussed, and as a rare coda we can even identify the voices of the (former) slaves themselves in runic inscriptions made by freedmen.

Prieto, Gabriel O. [31] see Druc, Isabelle

Prieto, Gabriel

[31] *Early "Guañape" Ceramics from the North Coast of Peru: New Data from Gramalote (Moche Valley) and Huaca Prieta (Chicama Valley)*

The problem of the introduction or adoption of the ceramic technology in the Central Andes is still an open debate. Earlier efforts have identified that ceramic vessels in the Moche and Chicama valleys were already in use around 1600–1500 B.C. Current research support the fact that the Second millennium is tentatively the period when domestic wares became popular in this region. New data from the Gramalote and Huaca Prieta sites support this view, suggesting that there seems to be formal differences between the ceramic vessels in the range of 1600/1500 to 1200/1000 B.C. and the so called "Cupisnique" cultural complex (1000/800 to 400/200 B.C.). In this paper the authors proposed that there is an early ceramic tradition in the North Coast of

Peru, specifically in the Chao/Viru–Chicama region between 1600–1200 B.C. which is well represented in littoral sites associated with fishing and gardening/farming activities. Are these formal differences only part of fishing settlements or did they share similarities with other contemporary settlements? This paper is a first attempt to systematically characterize an early ceramic tradition of the Peruvian North Coast.

[31] *Chair*

Prignano, Luce [72] see Lozano, Sergi

Prim, Lynda [66] see Swarts, Kelly

Primeau, Kristy (NYS DEC) and David Witt (NYS DEC)

[197] *Soundscapes in the Past: Towards a Phenomenology of Sound at the Landscape Level*

During the past few decades, researchers have developed methodologies for understanding how past people have experienced their wider world. The majority of these reconstructions focused upon viewsheds and movement, illustrating how individuals visually observed their environment and navigated through it. However, these reconstructions have tended to ignore another sense which played a major role in how people experienced the wider, physical world: that of sound. While the topic of sound has been discussed within phenomenology at the theoretical level, and has been approached at the site level through the growing study of “acoustic archaeology,” it has not seen much practical application at the landscape level. This multimedia presentation illustrates how GIS technology can be utilized to develop soundscapes, exploring how people heard their wider surroundings, as well as saw them.

Primeau, Kristy [208] see Witt, David

Príncipe, Andrés [160] see Martínez-Cruzado, Juan

Pritchard-parker, Mari

[73] *Discussant*

Prociuk, Nadya (University of Texas at Austin)

[188] *Awash in Meaning: Exploring the Symbolic and Ritual Functions of the Iron Age Bathing Structures of the Iberian Northwest*

Unique to the northwestern corner of the Iberian Peninsula, the ceremonial baths of the Iron Age Castro Culture present an entry point for our understanding of the social and symbolic mechanisms at work in Castro society. Not found anywhere else in Iberia, the precise use and meaning of the structures remains controversial. Were they an indigenous development, or a technology borrowed from the Roman world? Was their use related to personal grooming or ritual cleansing? Located within settlements, but with a distinct architectural style and limited accessibility, these structures clearly played a role in the lives of the community, but what role was that? The most striking feature of these structures are their decorated pedras formosas, or beautiful stones, which mark the entrance of enclosed chambers. With decorations ranging from single engravings to a proliferation of motifs, the pedras formosas mark boundaries and entry points into the symbolic world of the Castro people. Through an examination of the pedras formosas I will explore the potential uses and meanings of these distinctive structures from the perspective of understanding symbolic motifs as communicators of identity at different scales, from personal to communal.

Proctor, Lucas (University of Connecticut) and Hannah Lau (University of California, Los Angeles)

[87] *Reconstructing Land-Use and Agropastoral Production during the Middle Bronze Age of the Southern Caucasus: Preliminary Results from Qizqala, Autonomous Republic of Naxçıvan, Azerbaijan*

Inhabitants of the Middle Bronze Age in the Southern Caucasus (c. 2400–1500 BC..) are thought to be highly mobile communities, heavily reliant on pastoral resources. Few settlements have been recovered archaeologically, and fewer still excavated. New work from the Middle Bronze Age settlements and kurgans at Qizqala on the Şerur Plain in the Autonomous Republic of Naxçıvan, Azerbaijan therefore fills an important lacuna in our understanding of the lifeways of Middle Bronze Age peoples. We report on the initial results of an integrated analysis of archaeobotanical and zooarchaeological evidence for agropastoral production in the Middle Bronze Age from the 2014 and 2015 excavations. These data speak not only to the intentional management choices Middle Bronze Age inhabitants made regarding their floral and faunal resources, but also to their land use practices and potential environmental impacts. Here we test the prevailing hypothesis that inhabitants' lifeways in this period were largely predicated on sheep and goat husbandry. By examining the types and timing of subsistence activities visible in the Qizqala record, this study sheds light on MBA foodways, and the implications it has on the relative periods of mobility and sedentism built into inhabitants' seasonal rounds.

Proctor, Terren (Vanderbilt University) and Tiffany Tung (Vanderbilt University)

[204] *That's a Wrap: Understanding Processes of Cranial Modification among post-Wari populations from Huari-Vegachayoc Moqo*

This study examines cranial vault modification (CVM) frequency and styles among 35 crania from the Vegachayoc Moqo sector at the site of Huari, the former capital of the Wari Empire. The crania date to the post-Wari era (A.D. 1250–1400). In order to document the process by which they were modified, the crania were analyzed by noting the number of pad impressions and locations, as well as the center of applied pressure; the design of the modification devices was extrapolated from the observed impressions. Results show that among the 30 adult crania, 53 percent exhibit modification and two of the five children's crania (40 percent) are modified. Based on the analyses of the modified crania, there appear to be two types of CVM in this sample, in addition to the unmodified ones. Given that other studies have suggested that CVM was used as a marker of ethnic affiliation, there may be three distinct social or ethnic groups within this population. Stable isotope data (carbon and oxygen) from dental enamel will also be compared between the two modified groups and the unmodified crania to examine differences in childhood diet and water source, if any.

Proue, Molly (Northern Land Use Research Alaska LLC)

[148] *Dam It! Manipulating Water in the Tolovana Mining District, Alaska*

Obtaining adequate water for mining operations has always been a problem in Livengood, Alaska. To make mining feasible on small creeks in the area, ditches were excavated from the earliest days of the strike in 1915. As the character of mining evolved throughout the first half of the twentieth century, corporate interests formed to create even larger water conveyance systems, most notably the Hess Creek Dam, a sizable earthen dam built on permafrost. This poster presents an overview of the water control infrastructure spread across the historic mining landscape of Livengood as revealed through archival research and recent archaeological surveys.

Prout, Michael (Anthropology Master of Arts)

[93] *Subadult Human Sacrifices in Midnight Terror Cave*

Children throughout Mesoamerica were preferred sacrificial victims, especially to water deities. Because caves were associated with rain, ethnohistoric sources mention the sacrifice of children in caves. The importance of children in sacrifice was documented early on by Edward Thompson's dredging of the Cenote of Sacrifice at Chichen Itza. More recently archaeological investigations of caves have recovered and identified the skeletal remains of children that have been interpreted as sacrificial victims. This poster reports on the impressive juvenile skeletal assemblage from Midnight Terror Cave with an eye toward refining our understanding of subadult human sacrifice using this large sample.

Prouty, Michael (Alpine Archaeological Consultants, Inc.)

[110] *Representing Cultural Networks: A GIS Analysis of Spanish Colonial Settlement in San Diego*

The colonial efforts by the Spanish and subsequent generations resulted in the formation of cultural networks that were based on the reliance and access to key ecological resources. Ultimately these networks influenced the development of social stratification of the San Diego River watershed and the surrounding region. Incorporating the analysis of archaeological, anthropological, and historical data, and utilizing geographic information systems, a series of maps depicting site densities, a suitability model, and cultural interaction diagrams were built. Coupled together, these maps highlight the cultural networks that had formed prior, during, and after Spanish contact. The analysis of these networks and the resulting social stratification resulted in identifying settlement patterns that influenced the development of the San Diego region.

Prowse, Tracy (McMaster University)

[25] *Patterns of Mobility during the Iron Age and Roman Periods in Apulia, Italy.*

Archaeological and historical evidence indicates that the end of the Iron Age in southern Italy was characterized by political and social upheaval associated with a series of battles between the Roman Republic, indigenous Italian groups, Greece, and Carthage. The outcome for many local populations in southern Italy after the Samnite, Pyrrhic, and Punic wars was the subjugation of local populations, a decline in settlement size and density, and the confiscation of land by the expanding Roman Empire.

This paper explores patterns of migration between the Iron Age and Roman periods, particularly childhood migration, through the isotopic analysis of teeth from the Iron Age (seventh–fifth c. B.C.E.) sites of Botromagno and Parco San Stefano (n=30), and the Roman Imperial (second–third c. C.E.) site of Vagnari (n=54). Archaeological evidence from Vagnari indicates that this was an Imperial Estate owned by the emperor and run by local administrators. This raises the question of who lived on this estate—were they descendants of subjugated local Iron Age populations, or were they outsiders brought in by the conquering Romans to work on this estate?

Prufer, Keith M. [236] see Thompson, Amy

Pryor, Liza [58] see Fleming, Edward

Psoma, Aikaterini (University of Illinois at Chicago)

[166] *Ksagounaki, Diros: an Open Air Site of the Final Neolithic from the Viewpoint of Chipped Stone Tools*

The Final Neolithic Period (FN) in the Aegean and the Greek mainland is characterized by the proliferation of settlements and the occupation of defensible sites. The Ksagounaki site, located at the northern entrance of the Alepotrypa cave at the Mani peninsula, appears to be a representative example of such a transition. In the present study we try and locate changes occurring in the entire spectrum of prehistoric life of the denizens of the site during the FN, drawing information from the lithic assemblage that was recovered during the excavations on the site from 2012–2014. We discuss the technological and typological analysis of the artifacts, and the origin of raw materials. We then compare the assemblage with the chipped stone tools that have been recovered from the neighboring cave of Alepotrypa. By setting the lithic assemblage in an archaeological context we attempt to understand and identify the types of activities that took place in Ksagounaki, map the social structure of the local community, and assess the dynamics of the prehistoric settlement.

Ptacek, Crystal, Beatrix Arendt (The Thomas Jefferson Foundation), John Jones (Archaeological Consulting Services, Ltd.), Derek Wheeler (The Thomas Jefferson Foundation) and Fraser Neiman (The Thomas Jefferson Foundation)

[36] *Discovering Landscape Modification through Pollen Data Analysis at Thomas Jefferson's Monticello*

Pollen analysis can advance our understanding of change and spatial variation in the landscape of Thomas Jefferson's Monticello plantation from its initial settlement in the eighteenth century to the present. In this poster, we present and evaluate data from an intensive, multi-year campaign of stratigraphic sampling conducted in the largely ornamental mountaintop landscape immediately surrounding Jefferson's mansion. Comparing these data to stratigraphic samples not from Monticello Mountain allows us to measure the distinctiveness of trajectories of change in ornamental and agricultural contexts. We suggest that Jefferson's landscaping activities created a distinctive, ever-changing niche on the mountaintop which both humans and plants exploited.

Puckett, Heather (Alabama National Guard)

[73] *Discussant*

Pugh, Timothy [100] see Freiwald, Carolyn

Pugh, Timothy (Queens College and The Graduate Center)**[291]** *New Data on the Urban Grid at Nixtun-Ch'ich', Petén, Guatemala*

Gridded settlements are rare in the Americas and previously unknown in the Maya world until the Spanish conquest. Recent work has documented a modular orthogonal grid at Nixtun-Ch'ich', Petén, Guatemala. The grid appears to have been imposed upon much of the site around 400–200 B.C.E. In other parts of the world, planned orthogonal grids are frequently associated with powerful central authority. If this were the case at Nixtun-Ch'ich' then this act of power is correlated with the emergence of states in the area. Hence instead of elite claims to power carved on monuments, we likely have evidence of elite power carved into a city. Early rulers at the site likely used the grid to organize and control the newly urbanized population. Our recent work on the grid corridors has revealed that some of their surfaces were uniquely constructed.

Pugliese, Francisco [49] see Hilbert, Lautaro Maximilian

Pugliese, Francisco Antonio (MAE/USP BRAZIL)**[167]** *The Search for Places in Southwestern Archaeology: Ancient Landscape Building in the Madeira and Purus Basins and Long-Term Indigenous History*

Mounds, ditches, roads and other kinds of earthworks are found in ever larger quantities in southwestern amazon archaeology. An increase in the quantity and quality of research carried out in this area and the more detailed data that was recently made available have changed our understanding of the kind and degree of human interaction with the environment. Today, archaeological landscape building in this region can be explored in a more regionally detailed framework, since the knowledge produced about the western part of the Purus and Madeira river basins is now able to interface with studies carried out in the Brazilian Amazon Basin over the last two decades.

Almost all of the earliest human occupations found in the Amazon Basin have some relationship with places physically constructed in the past. The horizon of the mid-Holocene moundbuilders appears to be spread over an area larger than Japan, and its relations with later modifications of the landscape are beginning to be investigated. This symposium intends to offer an opportunity of exchange for researchers that have been acting in the southwestern amazon and beyond, with the purpose of improving the construction of the regional archaeological scenario.

Pullen, Daniel (Florida State University)**[166]** *Measuring Ceramic Change and Variability at Final Neolithic Diros*

The southern Greek Final Neolithic period extends for over 1,500 years, ca. 4700–3200 cal B.C., but has resisted satisfactory subdivision in largely due to the lack of stratified excavations. Nevertheless most scholars follow Phelps' 1975 division into an earlier and a later phase, each with distinct ceramic features, but this division combines data from many different regions, and finds from surface surveys or from poorly dated contexts.

A series of stratified radiocarbon dates from Ksagounaki, in both mortuary and domestic contexts, now allows us to construct a ceramic sequence for the middle four centuries of the FN period, ca. 4200–3800 cal B.C., in which we can measure temporal variability of ceramic features. What is clear is that ceramic features formerly used to subdivide the FN in fact extend throughout the period.

As the occupation of Ksagounaki corresponds to one of the most intense periods of use of Alepotrypa Cave, our next step will be to correlate the two sequences to see whether we can detect variability in ceramic change based on the different contexts of open air and cave.

Pullen, Daniel [166] see Parkinson, William

Punzo, Jose Luis (Instituto Nacional de Antropología e Historia)**[101]** *Landscapes of Power: The Uacusecha Presence in the Southern Portion of the Tarascan Señorío*

In 2012, INAH-Michoacan started an archaeological project in the south central portion of the state based on ample surveys in the region looking for the presence of sites associated to the Tarascan period, especially in relation to mining, transport, manufacture and consumption of metallic items. In that sense, with this new survey we been able to identify the existence of important archeological sites with presence of rectangular stone structures with circular extensions (yácatas) similar to those that exist at Tzintzuntzan or Ihuatzio, the capitals of the Tarascan Señorío. These sites were placed in strategic locations at the routes that connect the highlands, the core of the Tarascan Señorío, and the lower Tierra Caliente, places with relevant strategic resources for the Cazonci, especially copper mines. On the other hand, the historical sources of the XVI century give us important information about the caciques, the towns and the richness of the area. In this paper I will present the recently conducted research, discussing how the location of those sites and the routes for travelling in that landscape, speaks to the power executed by the uacusecha lords, expressed in the architecture and the prestige goods encountered at those sites.

Punzo Díaz, Jose Luis [74] see Somerville, Andrew

Purdue, Louise (CNRS-CEPAM UMR 7264), Cyril Castanet (University Paris VIII, LGP-UMR 8591), Lydie Dussol (University Paris 1, ArchAm-UMR 8096), Eva Lemonnier (University Paris 1) and Aline Garnier (University Paris 12)**[96]** *Where and How did the Maya Practice Agriculture in the Classic Period City of Naachtun, Guatemala?*

Maya communities occupied and cultivated the tropical lowlands of Naachtun (Peten, Guatemala) for nearly a millennia (A.D. 150–950). Major goals of the Peten-Norte Naachtun project include understanding why the city was founded, the reasons for its development and why it was abandoned. Due to constraining environmental conditions (non-permanent water supply, shallow soils), the availability and management of water and soil resources in the city and around the bajo are closely tied to settlement pattern dynamics. To discuss this issue, a systematic field geoarchaeological, agronomical, chronological and cartographic study was conducted in the city. Combined with laboratory studies (paleoecology, micromorphology), this study has allowed us to identify areas where agriculture and water management was practiced, define the technical systems in use (type of culture, agricultural practices, soil properties) and characterize their evolution through time. Four major hydro-agrosystems will be presented here: artificial areas supplied by small reservoirs (terraces, anthrosols), agriculture on natural soils, topographical depressions cultivated or exploited for water, drainage structures evacuating runoff water rich in sediments towards the bajo/reservoirs. They can be related to changing climatic conditions and phases of land anthropisation, and allow for an illustration of systemic answers to ecological and social issues.

Purdue, Louise [96] see Nondédéo, Philippe

Purnell, Mark [214] see Crellin, Rachel

Putt, Shelby [181] see Daniel, Chloe

Pyburn, Anne (Indiana University)

[10] *Community Involvement in Kyrgyzstan The Value of Heritages*

A decade of collaboration with Kyrgyz citizens from many walks of life has resulted in several new heritage initiatives including local museums, teaching materials for school children, a college textbook, a national avocational organization, and a new government ministry. Kyrgyz people have always placed great value on their heritage, but as these programs have developed people have become more interested in protecting the material signifiers of heritage. Counter to expectations, public and professional interest in Kyrgyz archaeology has emphasized a complex multiethnic past, and may have a softening effect on the ethnic tensions that have threatened to divide the country in the past.

Decisions about site preservation and public presentation are where archaeologists can bring collaboration with local and descendant communities to bear on policy decisions about heritage management and tourist development. The fact that these are decisions with direct political and sometimes economic import does not absolve archaeologists from engagement. In fact, it is in exactly this arena that engagement of archaeologists with the local communities and a suite of heritage stakeholders is most important for making decisions about preservation, but also for the human rights associated with heritage identity.

[54] *Discussant*

Pyburn, Anne [30] see Thomas, Jayne-Leigh

Pyburn, Anne

[128] *Responsibility for the Past, Responsibility to the Present*

Decisions about site preservation and public presentation are where archaeologists can bring collaboration with local and descendant communities to bear on policy decisions about heritage management and tourist development. The fact that these are decisions with direct political and sometimes economic import does not absolve archaeologists from engagement. In fact, it is in exactly this arena that engagement of archaeologists with the local communities and a suite of heritage stakeholders is most important for making decisions about preservation, but also for the human rights associated with heritage identity.

Pye, Jeremy (Cultural Resource Analysts, Inc.)

[38] *Parasites and Their Impact on Human Behavior and Society*

Parasites have had a significant impact on the course of human history. Parasites have caused the deaths of countless individuals, have resulted in the abandonment of settlements, and have even affected the outcome of wars. Parasitologists, biologists, and even medical anthropologists have conducted extensive research on how parasites affect the human body, including how they lead to malabsorption of nutrients, bowel obstruction, internal bleeding, blindness, physical disability and deformation, as well as many other symptoms of disease. What should be of keen interest to anthropologists and archaeologists is that certain species of parasites can actually effect behavioral changes in their hosts, which can sometimes have society-wide implication. This poster explores the life stories of a variety of parasites that can influence human behavior in the hopes that this discussion will bring a greater awareness of the importance of looking at past populations through an archeoparasitological lens.

Qian, Wei [180] see Nan, Puheng

Qin, Ling (Peking University) and Dorian Q Fuller (University College London)

[106] *Globalization and World Systems as Alternative Modes of Cultural Transmission in the Eastern China, 5000–2500 B.C.*

An eastern crescent zone of the Middle to Lower Yangtze and upwards to Shandong can be defined as a zone of Globalization processes in the Neolithic that was eventually broken down into a number of cores in a world system. The globalization model operates through Neolithic networks, that had no clear political centre but nevertheless promoted shared practices and cultural values over large distances. This is illustrated by the spread of food cultures: crops, cooking methods and ceramic repertoires. By 3000 B.C. regional centers emerged which fragmented this spread into cores of political and symbolic power from which privileged crafts and their understanding were dispersed by a more centralizing World System process. The latter can be illustrated by jades and eggshell ware, the forms, decorations and use of which all reinforced centrality in power, production and exchange.

Qin, Zhen [120] see Storozum, Michael

Quackenbush, William (Ho-Chunk Nation)

[203] *Discussant*

Quackenbush, William [266] see Reetz, Elizabeth

Quartarone, Melissa [291] see Austin, Tucker

Quave, Kylie (Beloit College)

[63] *Revealing Precolumbian Bundles: Collaborative Student-Faculty Research at the Logan Museum of Anthropology, Beloit College*

Recent research at the Logan Museum of Anthropology combines student and faculty expertise with archaeometric methods to reveal new information about coastal precolumbian Andean collections brought to the museum in the early- to mid-twentieth century. With student collaborators we scanned a possible "bird mummy" with computed tomography to reveal that there was no avian body but rather a complex suite of offerings within its cloth wrapping. They included maize cobs, shell, and other materials. These results are helping us to assign cultural and temporal affiliations to an object without archaeological context. Dozens of artifacts that came to the museum as a single mummy assemblage from the Rimac Valley, Peru were analyzed visually, microscopically, and through portable x-ray fluorescence and scanning electron microscopy to reconstruct the identity of the individual(s) with whom the textiles and wooden, ceramic, and metal objects were interred. By combining various methods in collaboration with students, we are working to reconstruct the life of a possible local administrator. This work is vital to bring to light previously unresearched and unpublished archaeological collections, while providing independent and collaborative research opportunities for undergraduate students and promoting interdisciplinary inquiry.

[198] *Chair*

Quave, Kylie [198] see Covey, R. Alan

Quave, Dr. Kylie [204] see Olesch, Dana

Quilter, Jeffrey [31] see Prieto, Gabriel

Quinn, Colin (University of Michigan)**[116]** *Urns, Mounds, Pyres, and Pits: The Many Pathways of Middle Bronze Age Bodies in Transylvania*

Communities of the Wietenberg Culture in Middle Bronze Age Transylvania (2000–1500 B.C.) participated in diverse and dynamic social, economic, political, and ideological institutions. Traditional approaches to the mortuary practices of this period, however, have obscured diversity in the archaeological record in favor of a more homogeneous characterization of burial practices as cremation and burial in urn cemeteries. This paper traces the many different pathways that Middle Bronze Age Transylvanian bodies traveled from death to burial. In particular, the co-occurrence of multiple techniques of processing cremated bodies, inhumation in pits in settlements, reuse of Early Bronze Age tombs, and bodies missing from the archaeological record are explored. Co-occurrence is approached as both an archaeological issue, incorporating spatial and temporal dimensions, and as a social phenomenon, where alternate pathways of the body represent different choices made by the living. Examining the co-occurrence of multiple body treatments is critical for understanding complex mortuary politics, identity, social segmentation, and the development of institutionalized inequality in the Transylvanian Bronze Age.

Quiroz, Luciana [207] see Belmar, Carolina

Quispe, Erika [63] see Levy, Jessica

Quitmyer, Irvy (Florida Museum of Natural History), Nicole Cannarozzi (Florida Museum of Natural History), Margo Schwadron (National Park Service) and Douglas Jones (Florida Museum of Natural History)**[28]** *Zooarchaeology of Three PreHispanic Sites in the Southern Georgia Bight: Evidence for Cultural and Ecological Continuity, Flexibility and Resilience*

Zooarchaeological research in the central Georgia Bight has arrived at a point where human subsistence behavior over space and time can be modeled. Elizabeth J. Reitz and colleagues have offered a testable hypothesis that subsistence rested on three cultural and ecological pillars: continuity, flexibility and resilience. For nearly 5,000 years, and possibly longer, resilient estuarine finfish taxa that easily recover from intensive harvest were most frequently exploited, while terrestrial and littoral zone taxa were less commonly consumed. Stochastic processes common to the marine environment and extreme semi-diurnal tides that cycle between two and three meters must have selected for flexibility within everyday subsistence planning. The question arises, do preHispanic subsistence practices represented in the estuaries of the southernmost extent of the Georgia Bight, and points just south, rest on these three pillars? Well recovered zooarchaeological assemblages from Castle Windy (A.D. 1190–1420), Turtle Mound (A.D. 1280–1640) and Site 8SL1146 (A.D. 1090–1388) validate this approach to resource use. The assemblages contain core finfish species such as mullet, spot, Atlantic croaker, and hardhead catfish whereas among shellfish, Eastern oysters and coquina clams fill a similar role. The zooarchaeological record documents a rich and stable fishery that was primarily associated with the estuarine system.

Rabinowitz, Adam (The University of Texas at Austin)**[261]** *"Periods, Organized (PeriodO)": A Linked Data Period Gazetteer and Approach to the Modeling of Scholarly Assertions*

The PeriodO project seeks to solve a problem in the harmonization of heritage data described according to chronological periods rather than computer-readable calendar dates. It does so using a Linked Open Data approach. Such approaches, in which records in databases are associated with common points of reference, rather than described according to unified metadata schemata, have been successful for the linking of heritage records related to places. So far, however, they have not been successful in linking periodized data, because data producers differ not only in their terminology but in the chronological and spatial extents they ascribe to the same period terms. The PeriodO solution is the creation of a gazetteer not of agreed-upon period concepts, but of period definitions offered by authoritative sources, with transparent modeling of both the assertions themselves and their scholarly provenance. These definitions consist of spatial and temporal coordinates in the form that they are provided by a particular source, resolved into a machine-readable chronological and spatial extent, and identified by a permanent URI (an ARK ID). The project has created a core dataset of more than 2700 definitions and a client interface that will allow a user community to continue to add new information.

[33] *Discussant***Raczek, Teresa (Kennesaw State University)****[221]** *"I don't Know all of these Stories": Method and Intention in Community-Oriented Research and Heritage Projects*

Scholars who conduct engaged and collaborative research and heritage projects often warn against treating participants as homogeneous communities who speak with a unified voice. Gender provides a useful lens to combat this tendency and to create a reflexive, action-oriented archaeology. This paper

will discuss the role of gender, intersectionality, and intersubjectivity in method and intention in archaeological practices. Current projects in Georgia, U.S.A. and Rajasthan, India, will be used to highlight the ways that gender, along with other representations of the self, plays a role in researcher-stakeholder interpersonal field dynamics as well as the construction of narratives about the past.

[221] Chair

Rademaker, Kurt (Northern Illinois University)

[139] *The Missing Middle: New Efforts to Understand Early Inter-Zonal Connections in the Peruvian Central Andes*

In southern Peru our group is investigating a Paleoindian settlement system with linked sites situated in diverse ecological zones and exhibiting vastly different subsistence adaptations. This system encompasses one of the earliest coastal fishing settlements in the Americas and high-elevation hunting sites on the Andean plateau. Determining the nature of this and other early inter-zonal connections in adjacent areas is important for identifying routes used to settle Andean South America, with implications for colonization patterns at the continental scale. Traditionally, inter-zonal links have been detected by identifying exotic materials and determining their probable provenance, but this approach alone cannot distinguish single-group mobility from exchange between multiple groups. This problem of understanding the origin of early contemporary, specialized adaptations and inter-zonal linkages in the Central Andes has been complicated further by the near-total absence of early sites in the region's geomorphically dynamic intermediate-elevation zones. We will present new results from interdisciplinary study of lithic distribution patterns, site seasonality, and stable isotope analysis of high-elevation human remains. We also will discuss alternative models for the initial exploration of the high Andean plateau that our group is evaluating via systematic survey efforts at intermediate elevations.

[62] Chair

Rademaker, Kurt [62] see Moore, Katherine

Radimilahy, Chantal [223] see Crowther, Alison

Rae, Brianna

[61] *Sandy Hill: A Preliminary Reanalysis*

The Sandy Hill Site (72-97) was dug on the Mashantucket Pequot Reservation over the course of several years as part of large-scale, multi-phase cultural resource management (CRM) excavations. The site, which dates to the Early Archaic, produced a dense assemblage of quartz lithic artifacts, as well as thousands of charred botanicals and calcined bone fragments. Very few bifacial tools were recovered, which has led to the argument that this site may represent a southern manifestation of the Gulf of Maine tradition. Sandy Hill also contained a series of large, overlapping features that have been interpreted as successive house floors, making this the first and only Early Archaic site in Connecticut to have extensive evidence of possible domestic occupation. In this paper I will conduct a preliminary re-analysis of Sandy Hill, with special attention to the aspects of the site that have yet to be addressed in the archaeological literature.

Raff, Jennifer [160] see Martinez-Cruzado, Juan

Rafferty, Sean [189] see Chovanec, Zuzana

Raffield, Ben (Simon Fraser University)

[192] *Cross-Cultural Comparative Approaches to Viking Slavery*

Slavery was an integral part of Viking culture, as attested by a variety of contemporary sources such as the observations of the tenth-century Arab envoy Ahmad Ibn Fadlān, which describe the capture, trafficking, sexual exploitation, and employment of slaves amongst Scandinavian societies, including their role in ritual and their treatment after death. Slavery nonetheless remains largely underrepresented in the archaeological record, although a small corpus of finds support historical and literary accounts. Given that Viking Age Scandinavian societies were clearly hierarchical, slaves likely formed a substantial portion of the population. Despite this, we have little knowledge of how such people were acquired and transported, where and how they were sheltered, provisioned for, or what conditions they had to endure. We also have little idea of what infrastructure was in place to support the transportation of slaves across great distances. Focusing on comparative aspects of the transatlantic slave trade, this paper will detail the potential benefits of large-scale, cross-cultural points of comparison in helping us to better understand Viking slavery. This includes the consideration of slave markets and emporia, theorisation of the Viking 'slave ship' (a neglected and important topic), and the contemporaneous moralities that underpinned and legitimised slaving.

[192] Chair

Rafidi, Brianna (Arizona State University), Christopher Carr (School of Human Evolution and Social Change, Arizo) and Mary Kupsch (Folklore Program, University of Oregon)

[286] *The Archaeology of Souls: A Foundation through Systematic Survey of Historic Woodland and Plains Native American Soul Concepts*

The potential for accurately reconstructing prehistoric Woodland and Plains Indian societies' notions of human soul-like essences using symbolically rich mortuary remains and art can be improved when analogous, comparative ethnohistorical information is collected systematically and with sensitivity to tribal and regional variations. Literature on 49 historic Woodland-Plains tribes produced 643 cases informing on nine selected subjects: number and locations of souls in an individual, number of souls that leave the body in life and death, where and when they exit, and their functions and qualities in life and death. Ideas varied considerably but patterned in their frequencies and geographic distributions.

Railey, Jim (SWCA - Albuquerque)

[168] *Radiocarbon Dates and Local Variation in Long-term Trends in Far Southeastern New Mexico*

There are now well over 1,000 radiocarbon dates from the BLM's Carlsbad Field Office region, and local variation in long-term patterns is becoming increasingly evident. In the Mescalero Plain, and most local areas within it, radiocarbon dates exhibit a prominent frequency spike in the seventh and

eight centuries A.D., followed by a precipitous plunge in the number of dates. But some local areas within the Mescalero Plain the numbers of dates remain comparatively high in the Late Formative period (A.D. 1100–1450), and the reasons for this may vary. For example, along the base of the Mescalero Escarpment, this pattern may reflect a concentration of Late Formative “villagers,” at least some of whom practiced farming. The same appears to be true for the Maroon Cliffs area, although most Late Formative occupation there dates from the Maljamar phase (A.D. 1100–1300), and the number of dates drops off in the Ochoa phase (A.D. 1300–1450). Along the southern periphery of the Mescalero Plain, however, the comparatively high frequency of dates in the Late Formative may signal a continuation of highly mobile, forager lifeways throughout the Late Formative Period, similar to adjacent portions of west Texas.

Raja, Mussa [170] see Bicho, Nuno

Rajagopalan, Angela (Dept. of Art & Art History, UNC Charlotte)

[15] *Representations of the Devil and the Demonic in Sixteenth-Century Mexico*

As the influence of the Spanish Inquisition increased in the decades following the Spanish conquest of Mexico, it became increasingly common for indigenous artist-scribes, or tlacuiloque, to substitute pictographic images of prehispanic deities with iconography related to the Christian devil. Drawing on examples from Mesoamerican painted manuscripts and murals produced in the sixteenth-century, this paper explores the nature of those representations. Distinctions occur between representations of pre-Hispanic deities (often depicted in the form of a classically-inspired Renaissance devil) and representations of priests or other individuals associated in the Spanish Catholic world with the demonic (often depicted in other forms but using attributes associated with the devil, such as dark pigment or clawed appendages). While the use of surrogate devil imagery asserted a Christian perspective when dealing with subject matter related to pre-Hispanic history and religion, it was not always effective in avoiding censorship.

Ralston, Ian (University of Edinburgh, Scotland) and Gary Lock (University of Oxford, England, UK)

[60] *The Hillforts of Britain and Ireland: How Regionally Varied are They?*

Since the beginning of insular Iron Age studies, the nature and variability of the settlement record across these islands have been a principal matter of interest. This approach reached a zenith in the mid-twentieth century, in the schemes of Christopher Hawkes and Stuart Piggott. These set out to delineate different provinces and regions within Britain in which distinctive cultures could be recognized, in substantial part framed on the distributions of varieties of settlements, as depicted for example in the seminal map of the Iron Age in southern Britain, produced by the Ordnance Survey. The Atlas of Hillforts in Britain and Ireland Project is an AHRC-funded collaboration designed to collate standardized information on the c. 5,000 sites of this type now known in Britain and Ireland, including more-recently discovered sites (e.g., through aerial photography), and also by eliminating earlier inconsistencies in terminology amongst the different archaeological services across the islands. This contribution will allow a preliminary assessment of the impact of the new data on previous perceptions of regionality within British and Irish Iron Age studies.

Ramireddy, Pranavi (Hampshire College), Jaime Ullinger (Quinnipiac University) and László Paja (University of Szeged)

[149] *Using Cremain Weight from a Bronze Age Cemetery in Eastern Hungary as an Indicator of Sex*

In well-preserved osteoarchaeological samples, traditional anthropological methods are employed to determine age at death, biological sex, differences in diet, activity level, pathologies, and genetics. Determining sex based on classical anthropological methods such as examining morphological and metric traits is often difficult or impossible with cremains due to fragmentation and post-depositional damage. A previous study conducted by Van Deest et al. in 2013 showed a correlation between cremain weight and sex using a modern sample. At the Békés 103 site, a Bronze Age cemetery and settlement in Eastern Hungary, 61 burials had been found by the end of the 2014 season, the majority of which are cremations interred in urns. In our study, total cremain weights were analyzed to see if sex could be determined from urns belonging to adult individuals. Weight-based determination of sex was then compared to results based on morphological and metric traits. Results show that weight estimations of biological sex did not match the results from morphological and metric traits when available.

Ramis, Damià (Independent researcher)

[296] *Animal Exploitation in the Early Prehistory of the Balearic Islands*

The Balearic Islands were the last large islands in the Mediterranean to be settled, as late as the third millennium cal B.C. Currently, there is a good zooarchaeological record for the late third and second millennia cal B.C., which allows the reconstruction of animal exploitation and management strategies in Mallorca, Menorca and Formentera. The results show that the obtainment of animal resources relied mainly on sheep, goat, cattle and pig husbandry. When this record is compared to the surrounding regions (east Iberia, south France and the central Mediterranean islands of Corsica and Sardinia), the main patterns that can be observed are (1) an unusual very high proportion of caprines among the livestock species, (2) a high relative frequency of goat compared to sheep and, (3) a nearly complete absence of exploitation of wild faunal resources. This was due probably to a combination of the relatively late colonization (not by early Neolithic, but by late Neolithic or early Bronze human groups) and comparative isolation of the Balearic archipelago until the late 2nd millennium cal BC.

Ramon, Gabriel (Pontificia Universidad Católica del Perú)

[135] *Itinerancy and Pottery Production in the Andes*

Swallows are a type of potter that travels seasonally to places away from their “home base” to practice their craft. For more than a century, and, in several parts of the world, ethnographers have documented this phenomenon, however, archaeologists have only addressed it tangentially. Yet swallows are important for archaeologists to consider, since they demonstrate that cultural interaction is not always limited to the distribution of pottery, but can also be important during the manufacturing stage. Based on fieldwork in more than thirty communities with potters, this paper will characterize the cyclically migrant potters of the Peruvian Andes emphasizing them as agents of transformation in material culture. Six varieties of Andean swallows will be presented. These varieties will be explained within a regional map of technical styles (aka manufacturing styles), considering their tools, their sources of raw materials, and their routes. These features will then be discussed in relation to analogous archaeological evidence to suggest how technical styles and pottery workshops may be used to trace cultural interaction.

Ramon Celis, Pedro

[231] *Cuevas Prehistóricas de Yagul y Mitla, procesos de gestión, patrimonio cultural y su construcción como concepto en la población*

A cinco años de la declaratoria de patrimonio cultural de la humanidad por la UNESCO, el sitio Cuevas Prehistóricas de Yagul y Mitla, que alberga elementos naturales y arqueológicos variados (desde los vestigios más tempranos de la agricultura en América, hasta evidencias del México porfiriano), es un ejemplo del arduo trabajo de gestión que se requiere para poder concretar un proyecto de dimensiones tan grandes. Este proceso de construcción no hubiese sido posible sin la participación e involucramiento de poblaciones de los tres municipios que conforman el área, que ha permitido no solo la protección de estos bienes, sino el acercamiento e interés de la sociedad civil para con su patrimonio. El presente trabajo, problematizará precisamente como es que estos nuevos valores de protección patrimonial han ido desarrollándose en las poblaciones generando nuevas formas de participación comunitaria.

[231] *Chair*

Ramos, Teobalda Inés [63] see Levy, Jessica

Randall, Lindsay (Robert S. Peabody Museum of Archaeology) and Marla Taylor (Robert S. Peabody Museum of Archaeology)**[11]** *Uncommon Engagement: Integrating Archaeology into High School Education*

Archaeology-centered education is typically relegated to throw-away curricula in elementary school classrooms, often not to be discussed again until post-secondary education. The Peabody Museum strives to break this pattern by actively engaging high school students and teachers in ways that connect archaeology to their everyday lives. This is done through a work study program focusing on hands-on interaction with artifacts, as well as teaching traditional subjects with archaeology. This model fosters a lasting appreciation for cultural heritage and a shared responsibility for preservation without a significant addition to the curriculum.

Randall, Asa (University of Oklahoma) and Kenneth Sassaman (University of Florida)**[132]** *Terraforming a Middle Ground in Ancient Florida*

All societies face contradictions between the perception of how the world was in the past or should be in the future, and the material realities of the present. Changing social and ecological contexts are catalysts for intervention by communities hoping to restore or assert structure during turbulent times. Terraforming is one mode of intervention in which large-scale modifications to land reference ancient times, events, and persons to create new opportunities for the future. At the landscape scale, terraforming as historical process reproduces or redirects the relations between communities, ecologies, and cosmologies. Ancient Floridians, for example, engaged in a wide range of landscape modifications to navigate the diverse relations between underworlds, upperworlds, and the day-to-day. Over 6,000 years ago on the St. Johns River, communities deposited shell, earth, and objects in ridges over assemblages of massive pits dug by their predecessors, arguably restructuring the relationships among wetlands, the living, and the dead. Later communities of the Florida Gulf coast constructed mounds and ridges at a time of rapid sea-level rise to redirect their social capital towards landward communities of lesser vulnerability. The "middle ground" of terraforming in Florida was the reconciliation of futures past with the uncertainty of futures to come.

Rando, Carolyn [187] see DuBois, Erin

Rangel De Lázaro, Gizeh (University Rovira i Virgili. University of Havana) and Armando Rangel Rivero (University of Havana; Museo Antropológico Montané.)**[156]** *Cuban Natives Cranial Deformation. The Implications to the Skull Vascular System*

The precolumbian deformed skulls, display an oblique tabular fronto occipital artificial cranial warp, which is an Arawak-Taino cultural characteristic element. Such cranial deformations were induced immediately after birth, in both women and men. According to the descriptions supplied by Columbus and other chroniclers, deformations were practiced by the Taíno pottery agriculture groups living in Cuba. Although not all Taíno's skulls were deformed, this feature is typically used as a cultural identification of these populations. Our main goal is to review the principals' craneovascular implications of cranial deformation in Cuban precolumbian culture. Skull morphogenesis comprises open neurocranial sutures till advanced adult stages. Usually, they finally close long after the brain is completely grown and developed. However the prematurely sutures close may lead to a pathological situation known as craniosynostosis, linked to diverse neurocranial malformations depending on the suture involved. This practice disappeared in the early years of colonization. Such changes may be able to influence the morphology of specific vascular endocranial traits.

Rangel Rivero, Armando [156] see Rangel De Lázaro, Gizeh

Rangel Rivero, Armando (University of Havana. Museo Antropológico Montané.)**[156]** *American Archaeological Expeditions to Cuba Related with Museo Antropológico Montané*

At the beginning of the twentieth century, several American archaeological expeditions were made to Cuba. The Museo Antropológico Montané from the University of Havana was the mediating institution for academic exchange. They were conducted to explore, excavate and treasuring pieces. The description of these expeditions is the goal of this work. In 1900, Stewart Culin, from the University of Pennsylvania, sought descendants of Aboriginal communities in the region of Baracoa and its observations were published at "The Indians of Cuba" two years later. Mark Harrington, from the Heye Foundation, excavated in various regions of Cuba and edited "Cuba before Columbus" in 1921. The last expedition, in the late nineties, was to learn about the collections in the museum and organize the exhibition "Taíno Pre-Columbian Art and Culture from the Caribbean," in the city of New York, made in 1997. In these tasks participated archaeologists, formed with the support of foundations and universities, namely the Smithsonian Institution, Yale and Pittsburgh University and Museo del Barrio in New York, among others. The contributions made by the specialists were, to define periodization and classification of pre-Hispanic cultures that inhabited the island.

Ranhorn, Kathryn (The George Washington University), David Braun (The George Washington University), Christian Tryon (Harvard University) and Alison Brooks (The George Washington University)**[177]** *Late Pleistocene Lithic Technological Patterns in East Africa*

Genetic and fossil evidence suggest East Africa played a significant role in the origin and dispersal of modern humans. While studies of East African Middle Stone Age (MSA) assemblages exhibit apparent regional patterning, this is often based on industrial designations derived from presence/absence

or frequency of specific forms. Regional comparisons of these assemblages are inhibited by differences in comparability, especially of raw material, reduction intensity, and inter-analyst variation. We test the hypothesis that East African MSA assemblages in central-north Tanzania exhibit more similarities to each other than to assemblages further north in the Rift Valley taking into account these inherent influences on technological variation. We collected morphological data on assemblages from Nasera Rock Shelter, Mumba Rock Shelter, Kisese II Rock Shelter, Prospect Farm, Koobi Fora, and Muguruk. Raw data were log-transformed and binned according to raw material and reduction intensity. Several independent analyses test differences within different domains of the reduction sequence (e.g., core exploitation and modification versus tool manufacture and retouch) (following Tostevin 2012). Patterns of variation were quantified using methods previously tested with actualistic experiments (Ranhorn et al 2014, 2015). This study has implications for the hypothesis that Late Pleistocene human populations had extensive cultural networks.

Rankin, Jennifer (Temple University / AECOM) and R. Michael Stewart (Temple University / NJ HPO)

[153] *Paleoindian Archaeology in the Delaware Valley: Insights from the Snyder Site Complex in New Jersey*

The Snyder Site Complex consists of multicomponent prehistoric localities situated on landscapes adjacent to the Delaware River in the river basin's mid-section. Over 30 fluted Paleoindian projectile points or bifaces have been reported from plowed/surface and stratified contexts. This number of diagnostic artifacts is relatively unusual in the context of what is known about other Paleoindian sites in the Delaware River Basin. The Snyder Complex is among the approximately 110 Paleoindian sites known for the New Jersey and Pennsylvania portions of the Delaware Valley. The sites of the Snyder Complex stand out because of the large area that it covers, the potential for stratified deposits, the number of fluted bifaces that can be associated with its Paleoindian occupations, and the fact that it is revisited throughout the Paleoindian period. In this paper, we briefly outline the history of research by the Society of Pennsylvania Archaeology—Chapter 14 and present new data that highlights lithic resource use, intra- and inter-site patterning, environmental/climate change, and the variation in landscape use over time that contributes to our understanding of early Native Americans in the Delaware Valley.

Rappe, Charles and William Ringle (Dept. of Anthropology, Davidson College)

[127] *Computing Material Culture: The Utility of Mobile Photogrammetric Techniques in Capturing Structures*

Photogrammetric techniques have been around for many years but have not been widely implemented because of the requirements of known camera positions and expertise in registering photographs, as well as the difficulty involved with going from data points to actual models. This paper addresses concerns with accuracy, efficiency and overall utility of using more mobile photogrammetric techniques and related software which we began using in 2013. In addition, some of the benefits of photogrammetry in capturing architecture and in capturing irregular structures (ex. chultuns) will be discussed. The techniques were also used in the capturing of pit profiles at a number of active BRAP excavations. To test these concerns, the authors conducted an intensive experiment in photogrammetric recording during the summer field season of 2015. Over 50,000 images of over 60 structures in the Puuc region of the Yucatan were captured as input for the 3D modeling program Photoscan. This paper discusses camera selection and methods of photographing larger objects such as buildings. The accuracy of the models will be compared to laser models generated at the same sites during earlier field seasons.

Rareshide, Elisabeth (California State University, Northridge)

[82] *Tongva Ritual Practice on San Clemente Island: Reanalysis of Religious Dynamics during the Colonial Period*

Many archaeologists have studied religious identity in Native American populations. Tongva sites such as Lemon Tank and Big Dog Cave on the plateau of San Clemente Island provide a rich source of data on Tongva ritual practices. Collections from these sites include ritual avian and canid burials along with caches of seeds, beads, and ritually "killed" objects. Existing research has focused on connecting the archaeological record to the historical and ethnographic record to identify the rituals that the Tongva practiced at these sites, such as initiation and public mourning ceremonies. At the same time, artifacts such as metal, glass beads, and mission cloth indicate that these sites were occupied during the Spanish colonial period. Therefore these collections, combined with current anthropological theory on religion, provide an opportunity to explore Tongva religious practice in the context of colonialism. This paper reexamines evidence of Tongva ritual on San Clemente Island to explore religious dynamics during the colonial period.

Rasic, Jeffrey [185] see Speakman, Robert

Rathbone, Stuart [80] see Napora, Katharine

Rawski, Zoe (The University of Texas at San Antonio) and M. Kathryn Brown (The University of Texas at San Antonio)

[27] *Preclassic Monumental Architecture at Xunantunich, Belize: Implications for Ritual Performance*

Recent investigations in the Preclassic site core at the site of Xunantunich have revealed new evidence for ritual activity at the site's earliest monumental structures. This ceremonial core, recently designated Early Xunantunich, is composed of three plazas, an E-Group, and several large, flat-topped platforms. The largest of these platforms forms the northern boundary of the site, measuring 100–115 meters wide and over 10 meters tall. Recent excavations of this platform revealed at least three construction phases, including an inset staircase on its southern face similar to those seen in other Preclassic platforms in the Belize River valley. All three construction phases at the associated E-Group's eastern architectural complex also contain inset staircases, and we believe the presence of stair blocks at both locations to be suggestive of public ritual performances. Within the final phase of the northern platform's central staircase, a small lip to lip ceramic vessel cache containing two carved jadeite heads was encountered. This Terminal Preclassic center-line offering has implications for more formalized ritual activities by this period. In this paper we highlight our recent findings at Early Xunantunich and present preliminary interpretations related to the function of the northern platform and its relation to the E-Group complex.

Ray, Celeste

[60] *Holy Wells across the Longue Durée*

Sacred springs and holy wells in northwest European prehistory evidence multi-period veneration, yet are archaeologically-resistant sites. This paper assesses evidence for votive deposition at sacred watery sites with a focus on the Iron Age to Christian transition in Ireland. While recent scholarship deconstructing "the Celts" has also dismissed contemporary holy well practices as invented traditions or as Roman introductions, ongoing veneration at nearly 1000 Irish well sites is part of an old paradigm. Early medieval literary documentation (in Irish myths, hagiographies, penitentials and annals) of "rounding rituals" at supermundane wells seems to offer direct precedents for today's wellside folk liturgies. Visitation of well landscapes also involves prayer and votive deposition at sacred trees and stone "stations" that have come within the cultural orbit of wells. Possibly revealing older patterns of regional saint dedications and interconnectivity, some well landscapes must be visited in conjunction. Inspired by Carole Crumley's emphasis on

interdisciplinarity, the Annales school, ethnohistory, and multiscalar dynamics, this paper reassesses the potential of holy wells as archaeological resources.

[60] Chair

Ray, Erin (University of California, Merced)

[273] *Comparative Geochemical Analyses of Lime-Plaster from a Cave Site in Belize, C.A.*

The medium-sized Late Classic Maya polity of Las Cuevas, Belize features a heavily-modified cave just below the main plaza, containing 73 platforms, seven staircases, and two sets of terraces. Geochemical analyses of the plastered surfaces were conducted in situ using portable XRF (pXRF) and in the lab using pXRF, XRD, SEM-EDS, and FTIR in order to understand the technology used to create the platforms within the cave. Platforms were sampled by selecting from different areas of the cave entrance, different light quality, and different sizes. I hypothesize that differences in chemical composition may represent chronological or functional differences. I will present the results of these different but complementary analyses, discuss the range of variation and explore possible explanations.

Ray, Erin [294] see Moyes, Holley

Raymond, Tiffany (Mississippi State University)

[98] *Comparing Prehistoric Freshwater Mussel Shell Ring Site Locations in the Mississippi Yazoo Basin with Other Archaeological Site Types Using a Modern Flood Model*

The Mississippi Delta is dotted with many types of aboriginal archaeological sites. Among these are freshwater mussel shell rings that seem to occur mainly along current or historical water sources. Using a modern flood model for the Mississippi Yazoo Basin, this paper will examine whether freshwater mussel shell ring sites in the Yazoo Basin occur predominately in highly flood-prone areas, as shell rings would create elevated surfaces for habitation. This paper will also compare mussel shell ring site locations with other aboriginal archaeological site locations in Quitman and Yazoo counties to determine whether there is a general correlation between flood-prone areas and site locations for all site types, or if there is a difference in distribution between mussel shell ring sites and other site types.

Raymond, Tiffany [277] see Carlock, Bradley

Razgildeeva, Irina [150] see Buvit, Ian

Rebellato, Lilian (Universidade Federal do Oeste do Pará), Camila Figueiredo (University of Toronto) and William Woods (University of Kansas)

[263] *The Geographical Distribution of the Amazonian Dark Earths in the Lower Amazon*

The geographical distribution of the Amazonian Dark Earths (ADE) in the Amazon region presents interpretive gaps. Understanding their distribution patterns might reveal the dynamics of indigenous settlements during pre-colonial times, as well as landscape management practices, and chronology. In the Upper Xingu, the distribution of ADE indicates that the smaller satellite villages were interconnected by roads to a larger village center. Santarém and Belterra regions, in the Lower Amazon, ADE sites have been located in distinct landscape types presenting great variation in their area, shape, position, depth, and density of archaeological artifacts. The large number of ADE sites across different types of landscapes results from long term of human occupation, an increase in population density and social complexity in the last millennium. In this paper, we will ponder on the impact of European contact during the colonial period in the formation and spatial distribution of ADE in the Belterra Plateau.

Reber, Eleanora (UNC Wilmington) and Raghda el-Behaedi (UNC Wilmington)

[277] *In Their Cups?: Background Lipids in Shell as a Basis for Analyzing Shell Cup Residues*

Lipids in a variety of large shells were extracted using both destructive and non-destructive techniques and analyzed with GC/MS. In pottery residue analysis, lipids found in extracted residues can be assumed to derive from human usage because natural geolipids are removed from the clay during firing. Shell cups do not undergo firing at temperatures high enough to result in lipid removal. As a result, it is important to understand the natural lipids present in large shells before attempting organic residue analysis of shell cups. This analysis will hopefully permit a better understanding of the possibilities for residue extraction from shell cups in archaeological context, which would open up a new artifact class to organic residue analysis.

[277] Chair

Rebolledo, Sandra [76] see Olguin, Laura

Redding, Richard (Kelsey Museum, University of Michigan)

[79] *A Model of Body Part Representation in Archaeozoological Samples*

The distribution body parts of animals consumed at a site is an important variable in understanding human subsistence behavior. I present a model of expected body part distributions for meat versus non-meat bearing elements that assumes whole bodies are transported to and deposited in a site. The model is based on observed fragmentation at three sites in the Middle East and Egypt: Hallan Chemi (Turkey), Farukhabad (Iran) and Heit el-Ghurab (Giza, Egypt). The model predicts that 33 percent of all limb elements should be from meat-bearing bones if whole bodies are being butchered on the site. Variations from this expectation must be understood in terms of human behavior, taphonomy, and/or excavation tactics. Examples of body part variation within two sites, Abydos (Egypt) and Abu Duwari (Iraq) are presented and explanations offered.

[79] Chair

Redmond, Brian (Cleveland Museum of Natural History), Nigel Brush (Ashland University), Haskel Greenfield (University of Manitoba), P. Nick Kardulias (College of Wooster) and Jeffrey Dilyard (Ashland Consortium)

[112] *New Evidence for Human Butchery of an American Mastodon from Central Ohio, USA*

A growing body of archaeological data now points to the likely exploitation of American Mastodon (*Mammuth americanum*) by late Pleistocene hunters in North America. The recent discovery of a partial mastodon skeleton at the Cedar Fork site in Morrow County, Ohio provides additional evidence in the form of at least one possibly cut marked bone. The skeletal remains are those of a large male and were disturbed post-mortem by animal scavenging and more recent geological processes including debris flows. Initial visual examination of a fragment of the neural spine of the second or third thoracic vertebra revealed eight wide grooves that appear to have been made by human agents. Detailed light optical and SEM examinations of the grooves indicate that at least five exhibit the characteristics of slice marks made by one or more flaked stone tools. The absence of crushed bone in the grooves suggests that none were the result of incising or chopping on dry bone but were made while the bone was relatively fresh. The recovery of two possible flaked stone tools in apparent association with the mastodon remains provides additional support for a conclusion of human butchery.

Reed, Ann [37] see Leach, Melinda

Reed, Paul (Archaeology Southwest)**[194]** *Protecting Greater Chaco: Recent Efforts to Save a Fragile Cultural Landscape*

The Greater Chaco Landscape of northwest New Mexico is threatened by increasing drilling activity associated with development of the Mancos Shale via fracking. Many groups and individuals have spoken up and banded together to fight this threat. Archaeology southwest has been actively engaged in this process for a couple years. In this presentation, I summarize our work and detail the steps taken to help ensure greater protection for the irreplaceable landscape associated with Chacoan Society.

[43] *Chair***Reed, William (USDA - Forest Service)****[165]** *Partners, Passports, Parsimony, and Preservation*

The Intermountain Region of the Forest Service manages 34 million acres of public land in Utah, Nevada, Idaho, Wyoming, California, and Colorado. As yet, more than 30,000 sites have been recorded in the Region. From inventory to excavation, to curation and interpretation, and stabilization, the Intermountain Region has fielded a well rounded Heritage program. This presentation will review a multitude of management challenges and successes accomplished with minimal funding and plenty of help from diverse preservation partners.

Reeder-Myers, Leslie [296] see Rick, Torben

Reents-Budet, Dorie (Smithsonian Institution) and Ronald Bishop (Smithsonian Institution)**[59]** *The Contents, Roles and Meanings of "Tribute" among the Classic Maya*

Ethnohistorical accounts of tribute among the Yucatek Maya provide an impressive list of commodities in circulation at the time of Spanish contact while also affording a glimpse of the interwoven layers of socio-economic relationships underlying these acts of tribute and tax payments. This paper compares the Yucatekan configurations, both recorded and implied, with those intimated from the patterns of production and distribution of Classic Period decorated ceramics. The study employs a multi-disciplinary approach to include art historical, epigraphic, ceramic paste chemical, and archaeological data.

Reese, Kelsey (Southwest Archaeological Consultants, Inc.)**[67]** *From the Empirical to the Conjectural: Using Spatial Analysis to Determine Population Settlement Patterns on the Uncharted Mesa Verde Landform*

A consistent issue that arises in archaeological studies is the absence of a complete set of data on which to perform analyses. Data may be unavailable for a variety of reasons, but its absence often inhibits complete understanding of a population in a defined area. In southwestern Colorado, survey coverage on the Mesa Verde landform is limited to the extent of Mesa Verde National Park, and therefore settlement studies are limited to less than one third of the prominent landform. To fully understand the size and expanse of habitations that were present in this area, this case study extrapolates settlement information from the recorded to help understand the settlements that could possibly lie in what is unrecorded. Utilizing geospatial analyses, multiple dimensions of settlement choices, and overarching settlement patterns, this poster will present potential demographic and settlement characteristics from A.D. 600–1280; and further include potential placement of habitation sites and various types of public architecture that may exist beyond the boundaries of Mesa Verde National Park.

Reetz, Elizabeth (University of Iowa Office of the State Archaeologist) and William Quackenbush (Tribal Historic Preservation Officer for the Ho-Ch)**[266]** *Creating Collaborative Learning Opportunities for Indigenous Youth with Archaeology-based Environmental Education*

Midwest archaeologists and Native American communities have recently initiated successful community-based and collaborative research endeavors. Through such collaborations, tribal leaders have expressed an interest in providing ways for youth in their communities to engage in contemporary cultural and natural resources work to inspire future stewardship and introduce potential professional pathways. Many archaeologists are in a unique position to promote heritage and preservation through environmental education, the fundamentals of which have overlapping and parallel themes to archaeology education and outreach. With the guidance of archaeologists and tribal community educators, youth can participate in authentic, hands-on and place-based archaeological activities that place them into the roles of scientists and researchers and allow them to interpret their own archaeological heritage. Also, such learning opportunities for American Indian students can enhance core academic subject matter by incorporating culturally relevant topics of interest. Archaeologists are introduced to the core principals of environmental education and Native American Learning Styles to minimize barriers among such community projects. Tribal historic preservation leaders and educators also offer guidance for conscientious communication between archaeologists and tribal classrooms, and outcomes from a recent partnership between archaeologists and Ho-Chunk youth in Wisconsin are explored.

Reeves, Jonathan (The George Washington University), Jonathan Scott Reeves (George Washington University), Melissa Miller (University of Tulsa) and David R. Braun (George Washington University)**[181]** *Modeling the Formation of Lithic Surface Assemblages through the Application of Aerial Photography and Photogrammetry*

Previous research has demonstrated that surface artifacts provide insight into land-use patterns when the taphonomic processes influencing their distribution are understood. This understanding is derived from detailed field mapping of landscape topography and geomorphology. Aerial imagery, when combined with photogrammetry and geospatial analysis, produces datasets that can be used to characterize the erosional processes that actively influence the occurrence of surface material. Using unmanned aerial systems and photogrammetric software (Agisoft Photoscan), we created high resolution orthomosaic imagery and, digital elevation models (DEM) of the archaeological landscapes of Koobi Fora. Terrain analyses of the DEMs investigate hydrology, slope, aspect and terrain ruggedness of the modern landscape. Here these methods are employed in combination with artifact location data, to explore how active erosional processes and topography influence the formation of surface assemblages. These data have implications for understanding when high densities of surface material reflect patterns of behavior as opposed to concentrations that are the result of variation in erosional patterns. We demonstrate the degree to which modern terrain influences the occurrence, density, composition and overall preservation of surface artifacts.

Reeves, Jonathan Scott [181] see Reeves, Jonathan

Reeves Flores, Jodi (Center for Digital Antiquity, Arizona State University) and Leigh Anne Ellison (Center for Digital Antiquity, Arizona State University)

[11] *Heritage Stewardship in the Digital Age*

Digital access to all levels of archaeological data, from the raw data to synthesized reports and summaries, can support public interest in cultural heritage. High quality internet resources easily provide access to more information on local sites that they are already interested in, and can also make them aware of heritage issues that they never considered. The Center for Digital Antiquity makes a variety of archaeological and historical information available to researchers and the general public and also interacts with people to answer their questions and promote interest in archaeology. The catalyst for this dialogue is tDAR (the Digital Archaeological Record), an online repository for archaeological data that makes images, documents and other types of information freely accessible. This paper looks at tDAR's impact on raising public awareness of archaeological data, explores collections in tDAR that seek to address ethical issues regarding cultural heritage while making accurate information more accessible, and examines ways in which using an existing platform such as tDAR can make it easier for people in the heritage sector to promote interest in and the preservation of cultural heritage.

Regnier, Amanda [240] see Hammerstedt, Scott

Reichardt, Stephen [265] see Simon, Arleyn

Reid, David [139] see Rademaker, Kurt

Reid, David (University of Illinois at Chicago)

[219] *Road Networks of Southern Peru: Connecting Landscapes of Colonialism*

Increasingly relevant to studies of geopolitical state expansion is the role of infrastructure: the networks of communication, travel, and commerce that embed local human landscapes within broader processes of imperialism. In pre-industrial communities, formal roads and highways were often the only localized presence of an overarching state, promising greater interconnectivity and shaping the colonial experience. I utilize geographic information systems (GIS) and remote sensing applications to model diachronic changes in road/path networks between the Ocoña and Majes Valleys in southern Peru. Ground truthing of roads and waystations suggest a deep prehistory of camelid caravan activity later coopted by the intrusive Wari and Inca highland states. While human settlement on the arid coast is considered to be relegated to the lush river valleys that descend from the highlands, this research suggests major lateral travel occurred across the desert pampa and was supported by associated waystations.

Reid, Basil (Senior Lecturer in Archaeology)

[220] *Caribbean's First Farmers: The Story of St. John in Southwestern Trinidad*

Recent starch grain analysis of three grindstones from St. John has confirmed that the Ortoiroid people of St. John (southwestern Trinidad) were in fact the first farmers of the insular Caribbean. This discovery is significant for the region as it provides proof that as far back as 7,700 years ago, early native communities in the Caribbean were actively engaged in the sowing, harvesting and processing of a range of cultivars. This paper will explore early farming at St. John in relation to farming epistemology of the pre-colonial neotropics.

Reifschneider, Meredith (Stanford University)

[128] *The Social Politics of Health and Healing: Archaeological Approaches to Social Meanings and Practices of Illness and Well-Being*

Colonial regimes of knowledge and practice and the attendant maintenance of biological, raced, class-based, and gendered difference have remained central concerns for social historians, anthropologists, and archaeologists. Within this milieu of colonial studies, social histories of Western medicine have increasingly interrogated the connections between biological science and racial and gendered difference. Social constructionist approaches to biomedicine provide a useful groundwork for archaeologists to move beyond strictly Foucauldian conceptions of subjectivity to understand contrasting social meanings and practices of illness and healing. In turn, targeted studies of material culture elucidate how conditions of oppression and trauma, and subsequent patterns of resistance and healing, are shaped by various circumstances. My own research at a plantation hospital on St. Croix, USVI aims to understand the social politics of health within this framework. The colonial past for many communities is not a historical legacy; rather the effects of colonialism and enslavement are evidenced today by the physiological and psychological outcomes of exclusionary and racist health policies. Archaeological studies of healing and medical practice can work to break down conceptual and methodological boundaries that perpetuate fundamental differences between "traditional" healing practices and scientific medicine, while stressing the importance of non-oppressive medical models.

Reinhart, Katharine [61] see Kasper, Kimberly

Reitsema, Laurie [8] see Smith, April

Reitz, Elizabeth (University of Georgia)**[133]** *Charleston, South Carolina (USA): A Case Study in Using Fish as Evidence of Social Status*

Charleston (South Carolina, U.S.A.) was founded in A.D. 1670 on the southeastern Atlantic coast of North America. The city's archaeological record can be divided into four periods: 1710–1750, 1750–1820, 1820–1850, and 1850–1900. Fishes were used by all social strata in Charleston. The minimum number of fish individuals fluctuates between 22 percent and 30 percent of the non-commensal individuals and the number of taxa ranges from 44 percent to 49 percent. A core group of estuarine fishes was used throughout the city's history by all social groups. These were animals that could be captured from shallow, brackish waters using relatively simple gear. Social distinctions are subtle, but after the 1710–1750 period, assemblages from elite townhouses are richer and more diverse than are assemblages from sites occupied by people of lower status. This higher diversity was achieved by using fishes infrequently used by other social groups, ones that were, perhaps, more costly to acquire. Most fish individuals were taken from trophic levels 3.4 and 3.5 regardless of time period, status, or site function. Thus, we find in Charleston's archaeological record evidence that fishes were important in the local economy and cuisine and that social distinctions are reflected in fish remains.

[1] *Discussant***Reitze, William (University of Arizona)****[268]** *Three Seasons of Survey in the Painted Desert: An Update of the Petrified Forest Boundary Expansion Survey*

In 2004 Congress authorized Petrified Forest National Park to more than double in size, in part to protect unique cultural resources. This poster introduces the preliminary results of the third and final season of pedestrian survey in these new lands. So far this research has recorded archaeological sites dating from the Archaic through the Late Pueblo periods. Sites range from lithic landscapes covering hundreds of acres to multi-room masonry or adobe structures. Survey methodology has focused on sampling a cross-section of different environments to better understand land use across new park lands. Mapping and recording has documented differential land use through time, with a focus on large semi-stabilized dunes. Detailed ceramic analysis has documented phenomenal diversity of ceramic types and sources. This additional survey and documentation work will change our understanding of prehistoric use of this region and how it compares to the broader southwest. In addition to cultural resource management goals this project also functions as a teaching laboratory with the Petrified Forest National Park internship program. To date, this program has incorporated fifteen college student interns for in-depth field training and independent research.

[268] *Chair***Remise, François (EPHE)****[119]** *The Celtic community of the Heuneburg: An Energetics Approach to Their Building Activity between 600 B.C. and 540 B.C.*

During the first Iron Age, between 600 B.C. and 540 B.C., the ruling elite of the Celtic community at Heuneburg in Southern Germany erected monumental buildings, mainly mud-brick fortifications and funeral mounds. The costs and efforts involved in the construction of these buildings have been estimated using the science of energetics. This study analyses the energy effort involved in the construction, preferentially on the basis of energy values which would have applied in the historical and social context, and using standard values only when no information allowing a more appropriate choice is available. Drawing upon previous experimental works in the field this study analyses the construction workflows in order to identify the most relevant time values for each part of the projects. Finally, this study offers a model of the labor and sociopolitical organization of this society during this period.

Rendu, William (CNRS - NYU), Lionel Gourichon (CNRS) and Stephan Naji (CNRS - NYU)**[146]** *Optimizing Cementochronology for Archaeological Applications: The CemeNTAA Project*

Various methodological approaches have been developed in zooarchaeology to discuss how past population coped with seasonal constraints. Among them, the analysis of tooth cementum incremental structures (cementochronology) is often used for discussing seasonality in archaeological contexts. However, several issues have been raised about the method, such as the absence of a standardized protocol, the lack of data for specific species, variability between geographical populations and destruction of archaeological materials. Here we present the CemeNTAA consortium which proposes a three-step program to address these issues and improve cementum analyses. First a common protocol validated through interobserver blind tests is now available. Second, a renewed biological documentation has been created from new comparative collections of modern specimens of the main Pleistocene-Holocene European preys. This reference documentation will systematically document cementum intra-population variability. Finally, multi-scale spectrometry analyses (optical, synchrotron microtomography and X-ray fluorescence, laser ablation isotopic mapping) are conducted to increase our knowledge of cementogenesis. This approach will help create a cementum 3D map which purpose is to minimize sample destruction through non-intrusive analyses. Preliminary application in an Early Aurignacian context of Southwestern France suggest a highly seasonal hunting organization in answer to the seasonal fluctuation of the reindeer population.

Renson, Virginie [180] see Nan, Puheng

Renson, Virginie (University of Missouri), Hector Neff (California State University Long Beach), David Cheetham (Arizona State University), James Guthrie (University of Missouri) and Michael D. Glascock (University of Missouri)**[236]** *Lead and Strontium Isotopes to Source Ceramics in Ancient Mexico*

Recent study showed that lead isotope analysis constitutes an efficient tool to discriminate between ceramics from different origins and can be used to trace pottery provenance in the Eastern Mediterranean (Renson et al. 2011 [Archaeometry 53] 37-57, Renson et al. [Archaeometry] in press). We are now applying this approach to Olmec-style pottery from Mexico. In this study, we analyzed lead and strontium isotopes of fragments from various Olmec-style ceramic wares excavated at San Lorenzo, Mazatan and Tlapacoya (including Limon carved-incised, Calzadas-carved and La Mina White). Contradictory hypotheses regarding the origins and exchange of these ceramics have been raised and the various interpretations are still being hotly debated (e.g., Blomster et al. 2005 [Science 307] 1068-1072, Stoltman et al. 2005 [Proceedings of the National Academy of Sciences 102] 11213-11218, Neff et al. 2006 [Latin American Antiquity 17] 54-76, Stoltman 2011 [Archaeometry 53] 510-527). This study investigates how to use the isotopic approach to confirm or refute previous interpretations based, among other, on neutron activation results and how it could contribute to trace interactions in the Mesoamerican region.

Retamal, Rodrigo (Dept. Antrop., Universidad de Chile. Dept. Biol. Anthropol., Cambridge University.), Aryel Pacheco (Department of Archaeology, Durham University, UK.), Francisca Santana-Sagredo (Research Laboratory for Archaeology and the History of Art, University of Oxford), Samantha Cox (Department of

Archaeology and Anthropology, Univer) and Jorge Pinares (Facultad de Odontología, Universidad de Chile.)

[76] *Punishment or Surgical Procedure?: Intentional Amputation in a Late Intermediate Period (1000–1450 A.D.) Individual from Pica 8 cemetery (Northern Chile)*

Presented here is a case of intentional amputation found in a 30–40 year old male (inventoryN° B0796) from the Pica 8 cemetery in Northern Chile who exhibits an antemortem loss of all his left toes. Whilst Munizaga (1974) suggested that this mutilation was caused by frostbite, our CT scan analysis suggests intentional amputation.

While this intentional amputation could be the consequence of a surgical procedure, amputation as a form of punishment presents an interesting possibility to explore in consideration with the individual and cultural context. This individual also possesses an arrowhead embedded in his right first rib and violent traumas to his forehead and nasal bones. He is the only skeleton from Pica 8 (n=96 individuals) in which an arrow point is embedded and one of only six exhibiting cranial traumas (Pacheco and Retamal 2015).

These findings prompt a discussion focused on violence during the Late Intermediate Period in the South Central Andes. Considerations are made for the rise of violent conflict in this period, the use and conceptualization of body and self, and the juxtaposition of the possible interpretations of his role as either a warrior/hero, a slave/criminal.

Reuther, Joshua [21] see Potter, Ben

Reuther, Joshua, Ben Potter (Department of Anthropology, University of Alaska F), Charles Holmes (Department of Anthropology, University of Alaska F), Julie Esdale (Colorado State University- CEMML) and Jennifer Kielhofer (Department of Geosciences, University of Arizona)

[242] *Late Quaternary Landscape Change and Large Mammal Habitat Fragmentation in Interior Alaska*

It has been known for sometime that interior Alaskan terrestrial mammalian species diversity and biogeography changed during the Late Glacial and Holocene (16,000 years ago to present). Here we present a synthetic view of how these changes may have been manifested. Herbivores such as bison, camel, caribou, elk, mammoth, moose, horse, and saiga antelope once had widespread biogeographic distribution across Alaska. Several interrelated drivers behind the widespread mammalian shifts in diversity and ranges and extinction during the Late Glacial and into the Holocene in interior Alaska have been hypothesized. These comprise, but are not limited to, climate change, changes in vegetation regimes, shifts in available moisture, decreases in plant growing seasons, increases in snow accumulation, and predator pressure (including human hunting).

The models we present are based on well-dated paleontological and archaeofaunal data-sets, well-defined records of changes in soil and sedimentation regimes, and vegetation reconstructions (pollen and macrofossils) from lake cores. As expected, environmental changes during the last 16,000 years across the diverse landscapes of the region, did not affect each species equally. Many species' ranges diminished and several species became extinct, yet others survived and flourished into the later periods of the Holocene.

Reyes, Omar [139] see Méndez, César

Reyes, Omar (CEHA, Instituto de la Patagonia, UMAG), Susan Kuzminsky (University of California, Santa Cruz, Santa Cruz,), Cesar Mendez (4. Departamento de Antropología, Universidad de Ch) and Manuel San Roman (1. Instituto de la Patagonia, CEHA, Universidad de)

[207] *Examining Biological Variation among the Marine Hunter-Gatherers of the Chonos Archipelago, Western Patagonian Channels, Chile*

Our understanding of the evolutionary processes and the prehistory of South America have been enhanced by recent archaeological and biological studies on this continent. Of particular interest has been the focus on marine environments along the Pacific Coast and their importance to biocultural developments among human groups. In this study, we focus on the Chonos Archipelago (43°50'-46°50'S) in the Western Patagonian channels of Chile, which is comprised of a series of more than 150 islands forming a dense network of channels and fjords and covering an area of ~54,000 km². Recent archaeological excavations in this area have yielded a new chronology of human occupation starting at 6260 cal years B.P. We examine human skeletal remains recovered from excavations and surface collections in this area that date from ~2430 cal yr B.P. to the historic period. The Chonos assemblage is unique as it is the only systematically dated collection from this region. Using 3D geometric morphometric assessments of crania, we examine biological variation among the Chonos skeletons and coastal populations from other regions of Chile. Our results provide new data for elucidating the population history of prehistoric Pacific coastal inhabitants and the peopling of southern South America.

Rice, Prudence (Southern Illinois University)

[26] *Central Peten Jato Black-on-Gray: A Look at Gray Wares and Black Wares, Monkeys and Mortuaries*

Jato Black-on-Gray is an extremely rare Terminal Classic pottery type in central Petén, typically recovered as mortuary furniture. It is a hybrid, combining typical Petén forms with aspects of color, decoration, and use borrowed from wares and groups such as Chablekal Fine Gray and Achote Black, more common in western and southwestern Petén. In particular, an incised monkey image on a Jato vase from Tayasal ties it to common motifs on Chablekal bowls, which are also from burial contexts but were not imported into the lakes area. This suggests that Terminal Classic residents in the lakes area had broader familiarity with pottery and iconography in the west, and/or that potters from these areas moved into the lakes district, and that, regardless, innovation was alive and well in the pottery "business" in the lakes district.

[291] *Discussant*

Rice, Shaelyn [163] see McCafferty, Geoffrey

Rich, Michelle [256] see Navarro-Farr, Olivia

Richards, Katie (Washington State University)

[104] *What Does Fremont Mean Anyway? Finding a Useful and Constructive Way to Conceptualize a Regional System*

The meaning of the term Fremont has been heavily debated for almost as long as it has existed. For over half of a century many archaeologists have argued that the term is only useful in that it encapsulates the highly variable practices of a region. Others have argued that defining Fremont is impossible and even unproductive. We disagree with these assertions. We believe that there are sufficient similarities in material culture and social organization across the Fremont region to suggest that a definition of Fremont is both possible and productive. In this paper, we argue that recent trends which have

incorporated social theory provide a new avenue to explore and suggest ways to account for variability between sites.

[104] *Chair*

Richards, Katie [104] see Johansson, Lindsay

Richards, John (University of Wisconsin - Milwaukee) and Richard Kubicek (University of Wisconsin-Milwaukee)

[112] *Pits, Posts, and Not Much Else: Sub-Mound Archaeology at Two Late Woodland Effigy Mound Sites*

Effigy Mound is an archaeological taxon that references Late Woodland societies present in the western Great Lakes of North America from about A.D. 800 to A.D. 1050. Effigy Mound builders are known primarily by an estimated 15,000–20,000 mounds built in the shape of animals, supernatural beings and conical and linear forms. The end of the Effigy Mound period coincides with the adoption of maize horticulture by many Late Woodland groups as well as the appearance of new pottery traditions marked by the use of collared and castellated rims. Most Effigy Mound excavations were conducted in the late nineteenth and early twentieth century and focused on the mounds and their associated burial programs. Little attention was given to areas outside the footprint of the mounds. Consequently, we know little concerning activities that may have taken place in the immediate vicinity of constructed mounds. This poster illustrates results of large-scale excavations at two reported Effigy Mound sites that harbored intact sub-surface deposits including pits, postmolds, and hearths. The features may be associated with ritual activity connected to the construction, use, and possible episodic reuse of each site.

Richards, Patricia (University of Wisconsin-Milwaukee) and Catherine Jones (University of Wisconsin-Milwaukee)

[112] *Excavation at the Second Ward Cemetery, Milwaukee, Wisconsin*

The Second Ward Cemetery Association incorporated the Second Ward or Gruenhagen Cemetery, in 1850 after the association purchased the land from Joachim F. Gruenhagen. This Milwaukee cemetery consisted of between three and five acres and interments took place until 1870 when the Association defaulted on the property's mortgage and the land was sold by Sheriff's auction. By 1874, plans had been made to subdivide the property and an article appeared in the Milwaukee Sentinel announcing that burials needed to be removed in 30 days. The land formally occupied by the Second Ward Cemetery is a mix of houses and empty lots. It is also the location of the Guest House of Milwaukee, a homeless shelter for men. In the spring of 2014 several burials were disturbed when the Guest House installed a rain garden. Subsequently, an archaeological monitor was on site in 2015 when the Guest House broke ground for an addition to their building. Despite the addition occurring in an area that had been developed and disturbed multiple times since 1874, archaeological monitoring and subsequent stripping revealed the presence of over 55 intact interments. This paper presents preliminary results of the excavation of the Second Ward Cemetery.

Richards, Michael [223] see Guiry, Eric

Richards, Julian (University of York Archaeology Data Service)

[261] *Current Developments in Cyber-Infrastructure in European Archaeology*

In Europe, as in North America, there has been little attention to the long term issues of digital data curation, with consequent risks of catastrophic data loss. In recent years, however, there has been mounting pressure on government agencies and universities to ensure that the research they fund, and the underlying data, are properly managed, and are available 'Open Access.' Consequently, several European countries are now establishing digital data archives for archaeology. This paper will review current initiatives, and the problems they face, based largely on the experience of the UK's Archaeology Data Service, now approaching its twentieth anniversary. It will introduce ARIADNE, an EU-funded e-infrastructure which is attempting to facilitate integrated access to national archives and to European archaeological data.

[261] *Chair*

Richards-Rissetto, Heather [121] see Day, Zachary

Richards-Rissetto, Heather (University of Nebraska-Lincoln)

[174] *What does GIS + 3D Equal for Landscape Archaeology?*

Until recently, Geographic Information Systems (GIS) have held center stage in the archaeologist's geospatial toolkit. GIS has moved archaeologists beyond the map—but into what? In the early years, criticisms voicing GIS as environmentally-deterministic were abundant. In the ensuing years what methods and tool have archaeologists used to overcome these criticisms? How successful have we been? What shortcomings continue? New geospatial technologies such as airborne lidar and aerial photogrammetry are allowing us to acquire inordinate amounts of georeferenced 3D data, but do such 3D technologies help overcome this criticism? 3D GIS links georeferenced 3D models and visualizations to underlying data, allowing archaeologists to test architectural reconstructions and perform subsequent spatial analyses in 3D. This three-dimensionality adds a ground-based perspective lacking in 2D GIS maps to provide archaeologists a sense of mass and space more closely attuned with human perception. Ironically, 3D modeling and visualization can be criticized as "culturally-deterministic"—reconstructing archaeological landscapes where hills, streams, and plants serve as a backdrop rather than active agents in cultural transformation. This paper explores the strengths of GIS and 3D for landscape archaeology and offers some ideas on using 3D GIS to intertwine environmental and cultural factors to work towards new geospatial approaches for archaeology.

Richardson, Lorna-Jane [71] see Ellenberger, Katharine

Richens, Lane (Brigham Young University), Richard Talbot (Brigham Young University) and Scott Ure (Brigham Young University)

[104] *On the Road Again: A Consideration of Travel Routes within the Late Fremont Regional System*

Prehistoric travel routes were conduits of knowledge, goods, and people. Within regional systems they facilitated social integration and identity maintenance. This was true for Late Fremont period groups, who primarily occupied the rich river valleys of the northern Colorado Plateau and eastern Great Basin but who also spread across this vast region in smaller settlements. This paper focuses on identifying possible travel routes within the Late

Fremont regional system. We consider how these travel routes, largely shaped by environmental and socioeconomic factors, influenced Fremont regional interaction.

Richie, Jillian [148] see Chisholm, Linda

Richter, Kim (Getty Research Institute)

[264] *Art and Interregional Interchange in the Huasteca*

The Huasteca has long been portrayed as an isolated, peripheral culture of precolumbian Mesoamerica. However, recent archaeological and art-historical research challenge this view. The artistic evidence from the Huasteca points to a prolonged cultural dialogue with neighbors along the Gulf Coast, as well as to stylistic and iconographic affinities with Central Mexico, Oaxaca, and the Maya region. Archaeological excavations, especially at the site of Tamtoc, in San Luis Potosi, have revealed a monumental urban center with an occupation spanning the Preclassic to Postclassic periods. Tamtoc's Classic period monumental sculptures reveal ties to Classic Veracruz. During the Postclassic period, artistic connections expand into Central America and along the Gulf Coast extending to the Maya region and the American Southeast. Examples of Huastec artworks wherein these artistic similarities are manifested include portable artworks, such as codex-style incised shell pectorals, bones, and polychrome vessels, and non-portable works, such as codex-style red-on-cream murals and monumental anthropomorphic stone sculptures representing elite men and women. This evidence indicates that the Huastecs were active participants in shaping the artistic vocabulary shared across Mesoamerica, while simultaneously maintaining their own regional identity.

Rick, Potts [13] see Brooks, Alison

Rick, Torben (Smithsonian Institution)

[296] *California's Channel Islands as a Model System for Understanding the Historical Ecology of Islands*

Islands around the world have served as important model systems for understanding a host of cultural and environmental issues. Here, we synthesize our long-term research program on the historical ecology and archaeology of California's Channel Islands. Drawing on zooarchaeological, paleoethnobotanical, genetic, stable isotope, and other datasets we document a 13,000 year sequence of human environmental interactions from coastal foragers to early historical ranchers and modern conservationists. These data underscore the value of island archaeology for helping better understand contemporary environmental issues and the conservation, management, and sustainability of island cultures and ecosystems.

[157] *Chair*

Rick, John (Stanford University)

[178] *Brothers of Invention: Comparing Trends in Innovation in the New World Formative*

Competition between Andean Formative centers seems to have stimulated rapid rates of innovation in technology, architecture, art, and behaviors such as ritual. This in turn seems to reflect a significant change of the role and nature of religion as a force promoting or resisting change, introducing a motivation for radical transformation within a background of conservative, heavily tradition-based practices. These processes are particularly evident in recent investigations in Chavin de Huantar, and may well be evident in the record of other Central Andean formative sites. This raises the question of whether belief-driven transformations of the New World formative in general reflect a process of competitive stimulation in which 'convincing systems', to be successful, needed to create unique and differentiated material and experiential repertoire to aid in attracting cult membership. This paper raises the question of whether Andean and Mesoamerican formative societies show parallels in the role of innovation and competition, further complicated by issues of emulation and imitation.

Ridge, William (University of Illinois at Chicago)

[166] *Alepotrypa Cave and Regional Networks of Southern Greece*

During the Final Neolithic (4500–3200 B.C.E.) there appears to have been a major restructuring in the regional settlement networks of southern Greece. This included a general shift in activity from the north to the south with a significant increase in the number of small, short lived sites in southern Greece, particularly in coastal locations. Trade and exchange also appears to have intensified, with exotic materials moved further and more frequently than in previous periods. Alepotrypa Cave, and its associated open-air site of Ksagounaki, reflect these processes, being ideally situated in Diros Bay and with the recovery of notable imported raw material and finished goods.

In this paper, I examine Alepotrypa in its regional and historic context in order to explain the relationship between the local processes that occurred in Diros Bay with the larger regional processes that changed the social landscape of southern Greece. I also explore the structure and function of the regional interaction networks that developed in the Aegean and how they related to changes throughout the macro-region during the 4th millennium.

Riebe, Danielle (University of Illinois at Chicago) and Attila Gyucha (State University of New York at Buffalo)

[166] *A Home Above the Bay: A Neolithic Domestic Structure on the Mani Peninsula*

Over the past five years, the Diros Project has conducted multi-disciplinary investigations in Diros Bay near the modern day town of Pyrgos Dirou on the Mani Peninsula, Southern Greece. Excavations aimed at gaining a better understanding of the chronological and functional relationship between the Neolithic Alepotrypa Cave and the contemporary external settlement on the nearby promontory. Excavation trenches were selected based on preliminary data recovered through surface collection and remote sensing techniques. In Block 2, a part of a stone building was revealed. Radiocarbon samples date the structure to the Final Neolithic making this structure a rarity in the archaeological record of Southern Greece. This paper details the results of the excavations on the domestic structure and the features found in association. The data will be contextualized within a broader regional perspective and particular attention will be given to the organization and use of space.

Riede, Felix (Dept. of Culture and Society, Aarhus University) and Erick Robinson (Department of Anthropology, University of Wyoming)

[218] *Developing Intra- and Inter-Continental Research Networks for the Study of Human Adaptations to Lateglacial and Early Holocene Environmental Changes*

Over the last decade, our knowledge of human-environment interaction in prehistory has been radically transformed. It has become increasingly apparent

that prehistoric humans had to cope with a vast range of different environmental changes that had their own particular temporal and spatial dynamics. These changes ranged from millennial- and continental-scale ecosystem turnover and sea-level rise, to centennial- and hemispheric-scale abrupt climate change events, to extreme events such as tsunamis and volcanic eruptions. The complexities of the potential impacts of these changes on human societies cross-cut traditional regional and temporal research specialisms. Continued advancement of our knowledge therefore requires researchers to come together at intra- and inter-continental scales to share knowledge, data, and build multi-scalar models to investigate the variability of human adaptations to different kinds of palaeoenvironmental change. The International Union for Quaternary Research (INQUA) Humans and Biosphere Commission has recently funded a project that takes on this challenge: "Cultural and palaeoenvironmental changes in Late Glacial to Middle Holocene Europe—gradual or sudden?" We will present results from this project and discuss the development of an INQUA International Focus Group that will focus on these questions across the Northern Hemisphere.

Riegert, Dorothy Ann [235] see Drake, Stacy

Riehm, Grace (University of Alabama)

[8] *Evaluation of the Pensacola Relative Ceramic Chronology by Percentage Stratigraphy Seriation*

In parts of the U.S. southeast, including south Alabama, relative ceramic chronologies for prehistoric archaeological sequences are based on descriptive type-variety systems of classification that have remained unevaluated by seriation methods. This project assesses the chronological utility of the type-variety classification for Pensacola archaeological culture ceramics through the application of seriation methods to collections from three extensively excavated sites on Mobile Bay. Chronological utility is defined here by application of the popularity principle with evidence of introduction, increase, and decrease in ceramic type-varieties through time as ordered by stratigraphic superposition. Lyman et al. (1998) refer to this combined method of frequency seriation and stratigraphic sequence as percentage stratigraphy, which establishes a relative chronology based on a testable stylistic progression of ceramic types through time. Decorated pottery from Shell Bank (1BA81), Andrew's Place (1MB1), and D'Olive Creek (1BA196 and 1BA251) was sorted by previously established type-varieties and a seriation performed using the Excel macro created by Tim Hunt and Carl Lipo. Through this methodology, type-varieties of chronological utility can be identified and those that lack chronological utility can be rejected. The results of the seriation are presented and used to evaluate the chronological utility of the current Pensacola ceramic phase chronology.

Riel-Salvatore, Julien (Université de Montréal) and Fabio Negrino (Università di Genova)

[211] *Volcanic Winter and Population Replacements? Forager Adaptations in Liguria during OIS 3 across the Middle-Upper Paleolithic Transition*

There has been a lot of focus on the disruptive effects of dramatic climatic shifts on Paleolithic population dynamics, but the topic of cultural continuity across such events has been less intensely investigated. This paper presents data from some of our recent research projects in Liguria, especially from the site of Riparo Bombrini, to investigate the nature of the apparent resilience of the proto-Aurignacian in the face of events like the Phlegrean Fields eruption and the reasons why the Mousterian disappeared at the site in spite of this phenomenon not being strictly associated with a pronounced climatic shift.

Rieth, Christina (New York State Museum)

[2] *Settlement Archaeology and the Role of Persistent Places among Forager Societies in Eastern New York*

The settlement system used by the prehistoric populations of Eastern New York is one in which forager societies often reoccupied the same landscape creating persistent places. Evidence of this can be seen in a variety of single and multi-component occupations that span the Late Archaic and Transitional (4,000–1,500 B.C.) and Early Woodland Periods (1,000 B.C. –A.D. 200). Artifact assemblages found at these sites suggest that the site's occupants used a diverse array of tools manufactured from local and non-local lithic and ceramic materials. This paper examines a group of sites located along the Cobleskill Creek and its tributaries in western Schoharie County. Such sites are patterned in their arrangement and appear in what are arguably strategic locations along the waterway. Here, I discuss settlement of this landscape, and its potential to contribute to our understanding of foraging behavior in eastern New York. The locations are compared with similar persistent places in the adjacent river valleys.

Rieth, Timothy (IARII) and J. Stephen Athens (IARII)

[296] *Late Holocene Human Expansion into Near and Remote Oceania: A Bayesian Model-Based Comparison of the Chronologies of the Mariana Islands and Lapita Settlement*

Carson and colleagues have argued that the settlement of the Mariana Islands ~3500 cal B.P. marks the first major human expansion in the Western Pacific during the late Holocene. If this settlement date is correct, it would be the initial population movement beyond the Near Oceania and Island Southeast Asia region, an area occupied by modern humans for 40,000+ years. The previous consensus gave precedence to the rapid Lapita expansion throughout Near Oceania at generally the same time, followed a few centuries later by an explosive migration into Remote Oceania. However, the order and timing of the Mariana and Near Oceania Lapita migrations remains a hypothesis to be tested. Most previous analyses relied on ad hoc interpretations of a few calibrated radiocarbon dates, often from unidentified charcoal that may contain inbuilt age. Such an approach lends itself to the creation of a subjective, or at least imprecise and potentially inaccurate, chronology. To evaluate the proposed temporal priority of the Mariana Islands in a statistically rigorous manner, we created a Bayesian calibration model based on early settlement data from both regions. The model results are discussed and we suggest ways in which extant data can be improved through future research.

Riethmuller, Douglas

[85] *A Comparison of Sherd Paste and Clay Composition at the Ripley Site (Nysm 2490) Using X-Ray Fluorescence & X-Ray Diffraction*

The aim of this study is to attempt to source ceramic sherds recovered by Mercyhurst Archaeological Institute from the Ripley site in Ripley, New York. Based on data gleaned primarily from XRF analysis, visually as well as statistically, the clay's elemental composition, while not an exact match with the ceramic's composition, shows only minor variation and sufficient similarity to conclude that the clay used to form most of the sampled ceramics was sourced locally.

Sourcing was accomplished through the emplacement of 15 auger probes to recover clay from the site. The clay was prepared for analysis and analyzed by pXRF and XRD. A 24 sherd sample of the ceramic assemblage collected from Ripley in 2013 was subjected to pXRF analysis as well as XRD analysis. The relative percentages of 17 selected elements were then compared from ceramics and clay, as were the mineralogical data derived from the XRD. This study will add to the knowledge of the site by identifying a location of the raw material for a selection of sherds found at the site. It also will demonstrate the efficacy of pXRF and inefficacy of XRD for ceramics sourcing.

Rifkin, Riaan (Centre for Microbial Ecology and Genomics (CMEG))**[13]** *Ethnoarchaeology and the Symbolic and Functional Exploitation of Ochre during the South African Middle Stone Age*

Given that red ochre is a ubiquitous artefact in Middle Stone Age (MSA) contexts throughout southern Africa, the habitual exploitation of ochre has been widely interpreted as evidence for symbolism, a proxy for the origin of language and as a key element of 'symbolic' and modern human behaviour. Although evolutionary explanations generally agree that ochre and the products of its processing played a significant role in the adaptive strategies of early modern humans, they differ substantially in the functions assigned to it. My research aims to address the following questions: Did the various symbolic and functional applications of red ochre provide adaptive benefits to MSA Homo sapiens societies, and can ethnographic and ethnoarchaeological research provide insight into the possible prehistoric functions of red ochre?

Rigaud, Jean-Philippe [278] see Franklin, Jay

Riley, Tim (Prehistoric Museum @ USU Eastern)**[63]** *Poorly Provenienced Perishables at the USU Eastern Prehistoric Museum: New Directions for Old Utah Collections*

The Utah State University Eastern Prehistoric Museum in Price, Utah contains an impressive collection of textiles and other perishable artifacts from Eastern Utah. Many of these artifacts were donated by private individuals early in the museum's history and have very limited information on their discovery and provenience. Despite these limitations, these items can become much more than striking art objects displayed to the public. Recent efforts have focused on expanding the useful data available for these collections, including radiocarbon dating and botanical identification of the materials used in manufacture. The long-term goal of this project is to reincorporate these objects, detached from context, into an understanding of past human lifeways in Eastern Utah by providing a temporal provenience and detailed information on their manufacture. This ongoing effort has already produced some engaging results. A headdress manufactured from a Bighorn sheep cranium, horn sheaths, olivella shell beads, and milkweed cordage was dated to 900 years before present. This new data corroborates the stylistic age determination of the shell beads and has led to further research into the cultural affinity and authenticity of this object.

Riley, Jenny (Indiana University)**[156]** *Possible Evidence of Sloth Butchery: Results from a Faunal Analysis of Padre Nuestro Cavern, Dominican Republic*

Between 2005 and 2010, dive teams from the Indiana University Bloomington Center for Underwater Science performed surface collections of the entrance chamber to Padre Nuestro Cavern, a submerged freshwater limestone cavern located in the East National Park in the southeastern peninsula of the Dominican Republic. They extracted Chican ostionoid ceramics indicating use of the cave by the Taino culture (ca. A.D. 1000–1492), Casimiroid lithics indicative of the Archaic culture (ca. 6000–500 B.C.), and faunal remains including extinct sloth (*Parocnus serus*, *Acratocnus ye*), extinct platyrrhine monkey (*Antillothris bernensis*), and various other terrestrial and marine taxa. This paper presents the results of the faunal analysis, suggesting which taxa were deposited in an archaeological context, and discusses the bone surface modifications present on numerous sloth bones that may represent evidence for butchery by Archaic groups.

[156] *Chair***Rincon Mautner, Carlos****[294]** *Seats and Domains of Sociopolitical and Sacred Power: Ritual Cave Use in the Southern Mexican Highlands*

Numerous caves in the Southern Mexican Highlands are found in remote locations far from settlements and presumably along boundaries between what were once Classic and/or Late Post-Classic period polities. These caves were recognized as unique features of the ritual landscape and differed in terms of location, difficulty of access, and entity venerated. While some caves seem to have had a more local, even domestic use, others were of inter-regional renown. Influenced by socioeconomic and political factors they seem to have varied widely in terms of their historical and cultural trajectories and in their impacts on collective identity and behavior. Determining which centers of power would have benefited from the sacred power of these caves, the nature of the ritual ceremonies performed in their interiors, the manner in which these, as well as long-distance pilgrimages to cave shrines would have informed and affected local beliefs and ritual life, and how access was controlled, are among the thematic questions addressed in this presentation.

Ringle, William [26] see Gallareta Negron, Tomas

Ringle, William (Davidson College) and Gabriel Tun Ayora (Universidad Autonoma de Yucatan)**[127]** *Experiencing Yaxhom: Materiality, Memory, and Monumentality in the Puuc Hills of Yucatan*

Research conducted at the ancient Maya site of Yaxhom has identified very early monumental architecture next to one of the most fertile tracts in the Puuc region of northern Yucatan. A third field season, reported on here, carried out further mapping and testing of the urban center to determine the extent of accompanying Formative architecture. We wished to test whether the platform served to mark place for a population with minimal investment in residential architecture or whether it formed part of a larger complex of mounds, suggesting it was the product of a more complex and stratified community. A further goal was to assess how the early monumental core was appropriated by the Late Classic community that grew up around it, potentially revealing political strategies of the period and the formation of community memory.

Ringle, William [127] see May, Rossana

Rios, Jorge (Centro INAH Oaxaca)**[231]** *Arqueología y manejo patrimonial en San Pablo Villa de Mitla, Oaxaca.*

La zona arqueológica de Mitla ha sido en los últimos años una fuente de información arqueológica y paradigma de la conservación y manejo. Su desarrollo paralelo a las políticas públicas culturales del Estado Mexicano ha derivado no solo en un sitio arqueológico abierto al público sino una serie de eventos sociales y culturales registrados en libros y artículos, que hablan de una interacción de la comunidad local de manera profunda con su patrimonio. Este trabajo pretende mostrar el desarrollo de los trabajos arqueológicos de Investigación y Conservación al paralelo de las acciones de manejo patrimonial que se han desarrollado.

Rios Allier, Jorge [231] see Corbett, Jack

Ripp, Naomi (University of Colorado-Dever)

[236] *Burial Practices of the Teuchitlán Tradition and Changes Through Time: A taphonomic Approach*

Are there changes in burial practices of the Teuchitlán Tradition over time, and can any of these potential changes be identified? The data used in this analysis of burial practice was gathered from the 45 Teuchitlán Tradition burials housed at the Centro Interpretativo Guachimontones in Teuchitlán, Jalisco, Mexico. The osteology collection spans from the Late Formative Tequila II phase (350 B.C.–100 A.D.) through the Late Postclassic Atemajac II phase (1400–1600). The analysis of the burials was done through a taphonomic study of the skeletal remains within the burials. Data on burial practices come from analyzing the postmortem taphonomic conditions. This analysis can provide information on topics such as whether burials were primary or secondary, if the remains were buried immediately or left exposed for a time, etc.

Rippee, Kassandra (Coquille Indian Tribe)

[29] *Kilkich Youth Corp: Tribal Youth Taking an Active Role in Historic Preservation*

Tribal Historic Preservation Officers are responsible for the preservation and management of their Tribe's cultural resources. For the Coquille Indian Tribe, that means engaging the community in the protection, preservation, and maintenance of these traditional resources. The Coquille Tribal Historic Preservation Office connects with the community in a number of ways, the most important of which is through its Kilkich Youth Corp. The Kilkich Youth Corp is a tribal employment and enrichment program that provides tribal and community youth with opportunities to learn and experience Coquille tribal culture through mentorship and stewardship. Youth in this program participate in a variety of cultural activities such as archaeological investigations, regalia making, plant identification, and gathering and preparation of traditional plants, as well as public outreach and education to name a few. Youth engagement in cultural activities and preservation efforts early and often ensures the continued survival of the Tribe, its culture and its history through its most valuable resource - its youth.

Rissolo, Dominique [20] see Vaughan, Andrew

Rissolo, Dominique (University of California, San Diego)

[294] *A Reappraisal of Postclassic Maya Effigy Censers in the Cave Context: Evidence from the Central Coastal Region of Quintana Roo, Mexico*

Like the subterranean construction and use of ancient Maya shrines and altars, the presence of incense burners in caves provides unequivocal evidence of ritual practice. Effigy censers, particularly those of the Chen Mul Modeled ceramic type, were locally produced and widely used across the northern lowlands and have been reported in contexts within architectural precincts at a number of Postclassic Maya centers. The use of such censers in ceremonies involving deity veneration was most likely, given the range of Maya gods represented in effigy form. Ongoing research in caves of the central coastal region of Quintana Roo has revealed the common association of Chen Mul Modeled effigy censers, particularly in the form of Chaak, with Postclassic shrines and altars in caves. These censers appear to have been part of a ritual assemblage associated with Chaak and were likely integral to the performance of rain rites in caves throughout the region.

Ritchison, Brandon (University of Georgia)

[137] *Responding to Regional Collapse: A Late Mississippian Community on the Georgia Coast*

Communities are social fulcrums, situated within multiple scales of interactivity. Understanding the discursive relationship between regions and households through the lens of the community can allow for a better understanding of social transformations. In the decades preceding 1400 C.E., chiefdoms in the Savannah River Valley collapsed and the region became depopulated. Settlement evidence suggests large scale population movements from the valley to the Georgia Coast, with significant social changes occurring among coastal groups concomitant with this movement. Data from intensive shovel test surveys on and near Sapelo Island, Georgia demonstrate how households and communities reacted to and engendered these regional shifts.

Ritter, Johanna [95] see Gronenborn, Detlef

Rivals, Florent [278] see Rosell, Jordi

Rivas, Alexander (Washington University in St. Louis) and Carlos Efrain Tox (Universidad de San Carlos de Guatemala)

[4] *Predictive Modeling and the Ancient Maya Landscape*

The use of GIS-based analyses has been increasing in archaeology over several years, including predictive modeling from digital elevation models (DEMs). Critics of these methods suggest that these computational approaches leave no room for human agency, and can create improper landscape analyses. However, these methods can be properly used when operating in well-defined theoretical frameworks and correct scale. In this paper, we present recent ground survey data and ethnoarchaeological methods in a GIS to demonstrate how the Maya were able to conduct perennial inland canoe travel during the wet and dry seasons in Peten and Alta Verapaz, Guatemala. This approach shows how predictive modeling can challenge conventional ideas on human interaction with the physical and social landscape among the ancient Maya, specifically in regards to hydrological features, seasonality, and alternative routes.

Rivas, Scott (Indiana University of Pennsylvania)

[9] *Developing Demographic Proxies for Archaic Faunal Database Integration*

In conjunction with multi-scalar integrative faunal research on the use of aquatic resources by Archaic period hunter-gatherers, the EAFWG has been required to focus on both environmental and demographic reconstructions for both specific locales and larger regions within the interior of the North American Eastern Woodlands. Although the importance of social and ethnic factors has increasingly been recognized, both environmental change and

variability and human population growth and aggregation have been cited as explanations for spatial and temporal variation in the intensity with which aquatic fauna were utilized by Archaic people. However, reconstruction of human demographic variability has not been consistently considered across the region nor have methods of estimating demographic change among hunter-gatherers been fully explored. Archaeological site file data, although incomplete and inadequate, must be the basic source of information on population growth and aggregation. In this poster, I review possible approaches to these problems and report on our pilot study of demographic proxies. It is our contention that as archaeologists increasingly address macro-scale research projects, new methodological approaches must be developed.

Rivas, Scott [90] see Napoleon, Taylor

Rivas Romero, Javier [179] see Poot, Paulina

Rivas-Tello, Daiana (McMaster University) and Andrew Roddick (McMaster University)

[41] *Finding a Middle Ground: Paste Analysis by way of a USB Microscope in the Lake Titicaca Basin, Bolivia*

Ceramic pastes in the Titicaca Basin reflect shifting pottery production practices across space and time. Yet paste groups are not very standardized, making it difficult to compare ceramic pastes between sites, explore regional pottery production, social interactions, economy, and broader ecological and social landscapes of the past. This poster presents results from ongoing research employing a Dino-lite digital USB microscope in paste analysis and its value compared to petrographic analysis. Due to cost, time, and level of experience, most projects cannot petrographically analyze pastes. A USB microscope can measure the size, shape and abundance of particular inclusions more accurately than a hand lens. The digital USB microscope is portable, affordable and time efficient, allowing for analysis to be conducted in the field. This tool is being implemented to compare two common Late Formative Period (200 B.C.–A.D. 500) pastes from two regions in Bolivia, the Taraco Peninsula and the Upper Desaguadero Valley. This method is promising for future ceramic analysis, as it encourages standardization and inter-site comparisons. Ultimately, this tool provides quick yet detailed insights into past social landscapes.

Rivera Infante, Arturo (Instituto de Estudios Peruanos)

[283] *Panquilma's Architecture: Ideologies Involved in the Construction Process*

This paper explores the ideologies involved in the process of building structures utilized by people of elite and non-elite statuses. The 2015 excavations of compounds at Panquilma revealed a range of domestic and ritual activities. The data recorded suggest that local craft production was embedded in particular religious meanings and/or status paraphernalia related to specific pre-Columbian Late Intermediate Period societies. The association of destruction and regeneration of materials, seen in the modification of buildings, and material patterns found under floors, are related to Andean ideology regarding construction.

Rivera-Collazo, Isabel [14] see Sánchez-Morales, Lara

Rivera-Collazo, Isabel (University of Puerto Rico, Rio Piedras)

[220] *Environmental Change and the Social Context of Human Adaptation Strategies during the Archaic Period in the Caribbean*

The connection between environmental change and social response is complex because change occurs on multiple inter-related factors, human decisions are filtered by social buffers, and the rate and scale of environmental change differs from scale of human decision-making. In this presentation I consider the rate of coastal landscape change before the mid-Holocene affecting human settlement patterns in the Caribbean, evaluate traditional settlement patterns in the context of maritime culture, and investigate human response to a sudden, local higher-precipitation event at the beginning of the Late Holocene. The analysis of Archaic contexts in Puerto Rico suggests that the picture we have built of early settlement patterns is based on very incomplete data, and that adaptation strategies to climate change are not monolithic, even within the same period. Multiple responses can enhance resilience, as social support can continue through alliances and exchanges, strengthening social bonds that can help buffer catastrophes.

[100] *Discussant*

Rivers Cofield, Sara [265] see Morehouse, Rebecca

Rizzo, Florencia (Licenciada), Sabrina Leonardt (INAPL/CONICET), Amber Johnson (Truman State University) and Vivian Scheinsohn (INAPL/CONICET-UBA)

[94] *Applying Environmental and Ethnographic Frames of Reference Northwestern Patagonia, Argentina*

In this work, we apply the environmental and ethnographic frames of reference constructed by Binford (2001) and calculated in EnvCalc2.1 in order to generate and evaluate archaeological hypothesis for the central-western area of Chubut Province (Patagonia, Argentina), an area in which archaeological research has recently started. Patagonia is an elongated territory located between 39° W and 55° S in Southern South America. By its shape, it receives an important oceanic influence which determines the lack of subpolar conditions, tundra and permafrost, expected by its latitude. The regional climate is determined by the westerly winds coupled with precipitation induced by the western flanks of the Andean Cordillera [by a] 'rainshadow effect'. As a consequence, a strong east-west gradient is produced, with annual precipitation ranging from of 4000 mm on the western slope to 200 in the east. In our study area this gradient determines two biomes: the steppe, represented by Genoa Valley and the forest represented by the Pico Valley. Both valleys are connected and situated at similar latitude. The hunter-gatherer frames of reference are used to develop hypotheses regarding expected variation in subsistence, mobility, and housing across the study region. These expectations will be compared with the archaeological evidence from the region.

Rizzuto, Branden (University of Toronto)

[205] *Naipes, Standardized Middle Sicán (ca. C.E. 1000) Sheetmetal Objects: New Insights from Archaeometric Studies*

This poster highlights emerging results of the ongoing study that aims to further characterize the technological strategies, standardization practices, and social relations associated with the production of naipes during the Middle Sicán (900–1100 C.E.) period on the north coast of Peru. Initially conducted as part of MSc. research under the supervision of J. Merkel, archaeometric (pXRF, SEM-EDXS) and metallographic (chemical etching, optical microscopy, microhardness) analyses were carried out on thirty-one naipes—excavated by the Proyecto Arqueológico Sicán under the direction of I. Shimada—from

the sumptuous East Tomb of the Middle Sicán site of Huaca Loro, Peru. As analytical investigations of naipes have thus far been limited and either based on the Sicán examples or wider surveys of different contexts, the current study represents the most intensive archaeometric and metallographic study of naipes to date. Results suggest that naipes within a given bundle were produced from variable ore sources and compiled from multiple production events based on their arsenic content and morphology, demonstrating that standardization practices were employed by observationally skilled artisans and that the material properties of naipes conveyed important social meanings embedded in much larger Sicán value systems surrounding metal alloys.

Robb, Matthew (de Young Museum)

[58] *Ancient American Art at the Saint Louis Art Museum*

In 2013, the Saint Louis Art Museum presented the first major re-installation of its collection of art of the ancient Americas in nearly thirty years. This paper will present some observations on the challenges presented by a collection largely defined by a single donor, Morton D. May. May's donations coincided with the high water mark of collecting so-called "primitive" art in the 1950s and 60s. But there is also a history of collecting and displaying pre-Columbian art in Saint Louis before May, including a group of Mimbres vessels from the notorious Fain White King and material the Archaeological Institute of America's sponsored excavations at Quirigua. Additionally, Saint Louis lies in the domain of Cahokia. Despite being closer to home, many public and private collections of Mississippian material in the region have received relatively little attention. How do art museums balance the issues presented by archaeological material with complicated collection histories from all these places and times with the need and desire to educate the museum-going public?

Robb, John (Cambridge University)

[248] *Moderator*

[72] *Discussant*

Robbins, Allison [216] see Follensbee, Billie

Roberts, Theodore (PaleoWest)

[90] *Creating Space in New York City: Historic Landbuilding in Brooklyn*

Brooklyn's Floyd Bennett Field was the first municipal airport in New York City (1928) before its use by the U.S. military until the Vietnam War. Since 1972, the field has been administered by the National Park Service within the Gateway National Recreation Area- the first of its kind in an urban setting. The landform supporting Floyd Bennett Field is almost entirely anthropogenic having been created by numerous landfill episodes dating from 1878 to 1941. These efforts used two general categories of parent material- natural and cultural. Combining natural landfill (sand from Jamaica Bay) and cultural landfill (historic trash and industrial debris from across NYC), city engineers combined Barren Island with several other small islands to create Floyd Bennet Field. This poster examines the processes, records, and materials comprising the archaeological record of this part of Brooklyn.

[33] *Discussant*

Roberts, Jerod L. [131] see Lindsay, Audrey

Roberts, Jerod (Shumla Archaeological Research & Education Center), Victoria Muñoz (Shumla Archaeological Research & Education Center) and Carolyn Boyd (Shumla Archaeological Research & Education Center)

[131] *How to Capture a Photograph worth a Thousand words: Photographic Documentation of Rock Art in the Lower Pecos Canyonlands of Texas*

Digital photography provides increasingly sophisticated applications that are invaluable to rock art researchers. Shumla Archaeological Research and Education Center relies heavily on many of these applications to document, preserve, and analyze rock art—such as 3D modeling through Structure from Motion (SfM) photogrammetry, multi-focal stacking, color management, and digital field microscopy for stratigraphic analyses. Depending on which applications are used, there are important considerations that should be addressed to ensure the collection and management of accurate visual data. This presentation will discuss some of these applications and how they are being implemented in the extensive photographic documentation of one of the most complex and threatened rock art sites in North America—the pictographic mural of Rattlesnake Canyon.

Roberts, Victoria (Shumla Archaeological Research and Education Center), Jerod Roberts (Shumla Archaeological Research and Education Center) and Carolyn Boyd (Shumla Archaeological Research and Education Center)

[131] *Getting Up-Close and Personal with Pecos River Style Rock Art*

Pecos River style rock art in the Lower Pecos Canyonlands of southwest Texas and Coahuila, Mexico is arguably one of the most famous and complex pictograph styles in North America, if not the world. Thirty-two radiocarbon assays obtained from 19 figures range from 4200 ± 90 to 1465 ± 50 RCYBP. Many characteristics of the style have remained almost unchanged throughout that time. What attributes define the Pecos River style, however, are still debated, despite a seemingly iconic appearance. Shumla has been collecting attribute data for seven years and entering these data into a searchable rock art database. We can now begin to identify diagnostic attributes for the Pecos River style assemblage, as well as detect inter- and intra-site patterning of these attributes. Chemical, microscopic, and attribute analyses converge to clarify what defines a figure as Pecos River style.

Roberts, Patrick (Research Laboratory for Archaeology and the History of Art, University of Oxford)

[295] *Introducing Forests of Plenty: biological, temporal, regional, and methodological diversity in human rainforest adaptations*

In the 1980s, anthropologists argued that tropical rainforests were unattractive environments for long-term human navigation, subsistence and occupation. Yet, far from being pristine ecologies, the rainforests of Africa, Asia, Melanesia, and the Americas are increasingly being shown to have shaped, and been shaped by our species from at least 45,000 years ago, if not earlier. However, in many instances, archaeologists and anthropologists have concluded that early humans were occupying and using 'rainforests' without attempting to examine and detail the diverse nature of the inhabited ecologies, or human adaptations to them. Here we introduce the 'Forests of Plenty' symposium that, by bringing together specialists in numerous regions and time periods, aims to compare global human adaptations to tropical forests across prehistoric, historic and ethnographic timescales. By highlighting the applicability of developing methodologies in the fields of modern risk management, linguistics, history, genetics, biomolecular science, and archaeology to the study of human rainforest demographics, adaptations, and impacts, we highlight the more refined research questions driving increased understandings of our species' rainforest histories. We introduce this approach by drawing on our own multidisciplinary and multi-period work in the rainforests of South Asia and

Melanesia.

[295] *Discussant*

[295] *Chair*

Robinson, Tessa [47] see Baquedano, Elizabeth

Robinson, Erick (University of Wyoming), H. Jabran Zahid (Smithsonian Astrophysical Observatory, Harvard-Smi), Bryan N. Shuman (University of Wyoming) and Robert L. Kelly (University of Wyoming)

[55] *Holocene Climate Change and Human Population Growth Rates*

Statistical analysis of large databases of radiocarbon dates enables research on the processes regulating human population growth rates. Recent analysis of summed probability distributions of dates from the entire states of Colorado and Wyoming has found that both states had similar long-term growth rates of .04% for most of the Holocene. This growth rate was the same for Australia, Europe, and North America throughout much of the Holocene. Similar growth rates between different environments and non-agricultural/agricultural societies suggests that long-term population growth was regulated by non-local processes such as global climate or endogenous biological mechanisms. On the other hand, short-term deviations from this long-term growth rate were regionally variable. This suggests that long-term and short-term population growth rates were regulated by different factors at different spatial scales. We investigate this apparent scalar variability by comparing the different millennial-scale trends in the summed probability distributions with regional and global paleoenvironmental data.

[218] *Chair*

Robinson, Margaret

[111] *The Hopewell Problem: A Discussion of Digital Methods for Legacy Collections at Hopewell Mound Group*

The Hopewell culture was a unique explosion of cultural practices characterized by monumental earthwork construction, elaborate funerary practices and extensive exchange networks of exotic materials. The presence of these monumental burial mounds and earthwork structures on the Midwest landscape captured the interest of the earliest American archaeologists resulting in extensive archaeological excavations in the late nineteenth and early twentieth century. The vast legacy collections that resulted from these excavations are plagued by confusion and layers of historical complexity. The Hopewell collection is one example of how this lack of transparency has driven researchers away from tackling the inconsistencies of the archaeological data which has limited the usability of the collection. Replacing large monographs, digital databases and visual representations are the future of archaeological investigation and offer a unique perspective into interpreting the Hopewell legacy collections. This project aims to recreate the Hopewell Mound Group archaeological site by reorienting the legacy collections into a digital platform increasing visibility of the archaeological record to stimulate further research interest through visual exploration. The purpose of this poster is to outline the challenges of reconstituting and interpreting legacy collections within a digital medium and to provide some methodology for mitigating those challenges.

Robinson, Mark (University of Exeter)

[167] *Dual Organisation and Mortuary Ritual: Architectural and Archaeobotanical Evidence for the Southern Proto-Je, Brazil and Argentina*

Circa A.D. 1000 the Mound and Enclosure Complex (MEC) began appearing on the landscape of southern Brazil and Misiones, Argentina. The MEC mark a distinct change in funerary practice reflecting increasing complexity in social structure. Modern southern Je groups exhibit dual social organisation, characterised by exogamic, patrilineal moieties, dividing all beings, objects, and natural phenomena into two cosmological categories. Archaeological research is beginning to identify the early evolution and precursors to these later social forms. Survey and excavation of an MEC in Santa Catarina suggest dual social structure is manifested in the funerary landscape at multiple levels, from the plateau level to internal mound division. Charcoal identifications from earth ovens at PM01 in Misiones, Argentina, reveal highly specific species selection for ceremonial wood fuel that is determined by moiety membership. These findings provide insight into past social organisation and advocate methodologies that can target these phenomena.

Robinson, Jess (Vermont State Archaeologist), John Crock (University of Vermont) and Wetherbee Dorshow (University of New Mexico)

[218] *Paleoindian uses of Maritime Environments in the Far Northeast*

This paper explores the Paleoindian uses of the Champlain Sea (an inland arm of the Atlantic Ocean) over the course of the Paleoindian period. Environmental Changes that may have precipitated changes in subsistence and settlement patterns will also be discussed. Finally, scant but intriguing information from the Atlantic Continental shelf in the Far Northeastern region will be used as a proxy to explore and evaluate the settlement patterns demonstrated farther inland.

Robison, Jade (College of Wooster), Olivia Navarro-Farr (College of Wooster) and P. Nick Kardulias (College of Wooster)

[145] *Phoenician Colonization of Nuragic Sardinia: A World-Systems Model of Periphery-Semiperiphery Interaction*

The arrival of the Bronze Age (2300–1000 B.C.) ushered in many changes in the Mediterranean, including the emergence of the Nuragic culture on the island of Sardinia (Italy). The Nuragic culture takes its name from the nuraghi, the more than 7,000 dry-stone towers that dominate the landscape. The Nuragic population engaged in an extensive trade network within the Mediterranean throughout the Middle and Late Bronze Age (1700–1000 B.C.), trading with Mycenae, Cyprus, and mainland Italy. Contact with foreigners intensified the development of a common cultural identity and the emergence of an elite group. Subsequently, during the Early Iron Age, the Phoenicians also established colonies on Sardinia. This resulted in the incorporation of the island into an intensive trade network that originated in the Near East. In this poster, I argue this network can best be understood from a world-systems perspective. Specifically, I discuss my investigation of Nuragic-Phoenician relations utilizing a proposed world-systems model of periphery-semiperiphery interaction. I demonstrate how the strategic use of bronzetti, statuary, and specialized architecture by Nuragic elite reflected their ability to negotiate their incorporation in that ancient world-system.

Robles, Fernando [26] see Andrews, Anthony

Robles, Nelly M. [231] see Vera, Jaime

Robles Garcia, Nelly (Instituto Nacional de Antropología e Historia)**[231]** *Monte Alban arqueologico y Monte Alban social*

El estatus de Monte Alban como sitio de Patrimonio Mundial implica su manejo adecuado en la vida contemporánea. Aunque la tendencia general sería esperar que el sitio sea reconocido en su imagen histórica-social por los sectores académicos, económicos y los medios como un ejemplo de buenas prácticas, la realidad nos mueve a considerar como prioridad un esquema de gestión que tienda hacia una imagen de inclusion de las comunidades alrededor del sitio.

Esta ponencia contrasta la imagen arqueológica de Monte Alban, con la imagen de la complejidad social en la que este sitio sobrevive, para dar pie a una propuesta de desarrollo para el futuro, en la que la participación comunitaria se percibe como una realidad impostergable.

Rocek, Tom [168] see Anderson, Andrea

Rocha, Bruna (UCL - UFOPA)**[23]** *Interactions Across the Frontier? Exploring Interpretations of Ceramic Production and Design on the Upper Tapajós*

Excavations at ADE sites on the Upper Tapajós River, south of the Amazon, have unearthed ceramics that point to the existence of a cultural frontier along the Tapajós River's rapids. At Sawre Muybu (SM) and Pajaú, on the river's right bank, both fine and coarse pottery present techno-stylistic modes—including the use of either quartz sand or sponge spicule (cauixi) temper, of applied and punctuated fillets of clay and clay nubbins—that echo elements of Lower Amazon and Orinocoan ceramics belonging to the Incised and Punctuate Tradition (IPT) and Valloid series respectively, previously linked to the expansion of speakers of Carib languages. As elsewhere in the wider region, one of the hallmarks of the material from SM is hybridity, pointing to processes of local appropriation, although trade must also be considered. Further upstream, on the left bank of the Tapajós at Terra Preta do Mangabal however, a different ceramic production grammar prevails overall, with overwhelming use of cauixi, nicked rims and the frequent application of parallel incisions that at times form lozenges, hypothesised to be related to speakers of macro-Tupian languages. Here, the few unequivocal IPT pieces apparently bear testimony to the existence of exchange networks stretching north.

Rocha García, Raúl (Raúl Rocha G.) and Arturo Pascual Soto (Arturo Pascual Soto)**[154]** *Gobernantes Y Cerámicas Ceremoniales Del Edificio De Las Columnas De El Tajín*

Si hay algo que define el estatuto cultural del período Epiclásico en El Tajín, Veracruz, es la transición hacia modelos de gobierno que enfatizan la figura del soberano como el centro indiscutible de las relaciones sociales de la época. Es a estos nuevos gobernantes a quienes debemos de atribuir en el punto más alto de la antigua ciudad la edificación del Edificio de las Columnas y de su magnífico conjunto arquitectónico, además de la producción de un grupo de vasijas negras de forma semiesférica y decoradas con escenas en relieve que suelen aparecer casi exclusivamente en este lugar del asentamiento. La ponencia discute el período de su elaboración y el uso ceremonial que se les confirió de antiguo a tan singulares objetos.

Rochelo, Mark (Florida Atlantic University) and Donna Selch (Florida Atlantic University)**[7]** *Analyzing Historically Significant Archeological Sites to 1800s Survey Plats of Southeast Florida*

The landscape of southeast Florida has been dramatically altered over the past 150 years due to anthropogenic influences. The earliest, most detailed surveys of this region were conducted by the U.S. Surveyor General Land Office from 1846–1870, with an extended survey and map production caused by the American Civil War. These land plats were surveyed along the township and range to be used as the fundamental legal record for real estate for southeast Florida. However, southeast Florida has been inhabited for thousands of years by pre-historic Native American tribes. Remnants of these cultures have been observed and documented on maps, including the 1800s plats of which none known have been publicly geo-rectified. This research includes geo-rectifying and mosaicking these hand-drawn maps, then digitizing the identified features, including archaeological sites, in ArcGIS. Combining this data with previously identified and documented archaeological sites establishes a clearer image of historical native land use.

Rochelo, Mark [246] see Selch, Donna

Rock, Carolyn, Meggan Blessing (Florida Museum of Natural History), Nicole Cannarozzi (Florida Museum of Natural History), Arlene Fradkin (Florida Atlantic University) and Michelle LeFebvre (Florida Museum of Natural History)**[7]** *Reptiles Rule: Patterns of Prehistoric Consumption in the Interior of Southern Florida*

This poster discusses patterns of prehistoric consumption in light of results from recent archaeological investigations at black earth middens in the interior of southern Florida. The amount of faunal remains recovered from these sites may represent the largest single zooarchaeological project ever conducted for this region. More than 350,000 animal bones were identified from six sites, whose occupation dates ranged from the Archaic to Historic periods. Identified fauna revealed the overwhelming importance of reptiles, especially snakes and turtles, to the diet. Overall ratios of identified specimens by class included 76 percent Reptilia (reptiles), 21 percent Actinopterygii (ray-finned fishes), 2 percent Amphibia (amphibians), 1 percent Mammalia (mammals), 0.4 percent Aves (birds), and 0.1 percent Chondrichthyes (cartilaginous fishes). Changes in consumption practices over time, as well as potential trading or seasonal migration patterns, will be discussed.

Rock, Carolyn [164] see Manzano, Bruce

Rockman, Marcy (U.S. National Park Service) and Marissa Morgan (University of Maryland-College Park)**[191]** *The NPS Cultural Resources Climate Change Impacts Table*

The US National Park Service (NPS) is actively preparing for climate change and its current and potential effects across all of the cultural resources for which it has responsibility for management and guidance. These include archeological resources, cultural landscape, ethnographic resources, museum objects, and structures and buildings. However, the agency currently lacks data detailing how cultural resources will be affected by changing climates. To address this gap in knowledge, the NPS Climate Change Response Program in collaboration with the Cultural Resources Partnerships, and Science Directorate has prepared the NPS Cultural Resources Climate Change Impacts Table. This table provides detailed information exhibiting how climate change can or may affect cultural resources, organized by major observable climate change phenomena (e.g., sea level rise, temperature change) across

each type of cultural resource. This will be an invaluable tool for park managers and NPS partners to identify both the dramatic and the subtle impacts in order to prepare and plan for the continued protection, preservation, and documentation of resources in an uncertain future.

Rockwell, Heather (University of Wyoming)

[274] *Simulating Clovis Technological Diffusion*

Explanations for the rapid appearance of Clovis technology across the North American landscape as a population migration. Detractors from this hypothesis argue that the spread of Clovis more closely resembles the movement of a technology through a small, highly mobile population. Using a computer simulation approach this paper explores the conditions under which it would be possible for such a technological spread to occur. This simulation explores the requirements of population size, residential mobility and logistical mobility patterns in order to successfully spread Clovis technology throughout North America. The results of this simulation suggest that under most mobility schemes it would be highly possible that Clovis could have spread in such a manner.

Roddick, Andrew [41] see Rivas-Tello, Daiana

Roddick, Andrew (McMaster University) and John W. Janusek (Vanderbilt University)

[105] *Powerful Things: Stone Sculpture and Landscape Animacy in the Lake Titicaca Basin*

Archaeologists working in the Lake Titicaca Basin have become accustomed to treating Formative material traits—whether a style of decorated pottery, ritual architecture, or stone sculpture—as the “Yayamama Religious Tradition.” This term, originally defined by Sergio Chavez and Karen Mohr Chavez, has become a shorthand to refer to what is presumed to be a common approach to ceremonialism across the Titicaca Basin (see also Chavez 2004). More recently, scholars have associated it with the emergence of a new kind of leadership associated with the Late Formative around 200 B.C. Recent work indicates substantial heterogeneity in sculptural practices and social landscapes during the Late Formative. In this paper we emphasize the material imagery of sculptures recently discovered in a variety of contexts, including the southern (Khonkho Wankane and the Taraco Peninsula) and eastern (Huata and Escoma) Lake Titicaca Basin. We argue that the power of Late Formative lithic materiality stemmed not from centralized authorities but from local political centers and their attention to animate landscapes.

Rodell, Roland [258] see Green, William

Rodning, Christopher (Tulane University) and Jayur Mehta (Tulane University)

[60] *Resilience, Hierarchy, and the Native American Cultural Landscapes of the Yazoo Basin and the Mississippi Delta*

Within the field of ecology, resilience is the capacity of an ecosystem to withstand change and to regenerate itself after disturbance. Adapted to the archaeological study of past cultural systems, the concept of resilience refers to the capacity of a cultural system or a cultural landscape to endure change. Archaeologists have primarily recognized resiliency in cultural systems of regions characterized by arid conditions, either permanently or periodically. This paper considers prehistoric Native American settlement patterns and monumentality in the Yazoo Basin of Mississippi and the Mississippi River Delta of southeastern Louisiana, where cultural practices and landscapes have been shaped largely by water, rather than aridity. Water has impacted the Yazoo Basin and the Mississippi Delta in different ways, and those effects had different outcomes on the arrangements of monuments, settlements, and people within Native American landscapes during prehistory. Our treatment of these topics and these study areas is guided by Carole Crumley's concepts of historical ecology and landscape history, and we also follow Professor Crumley's approach to studying past landscapes in drawing upon relevant paleoenvironmental, archaeological, and ethnohistoric evidence.

Rodriguez, Enrique (University of Texas)

[128] *Social Archaeology and Debating Local Scholars*

How can archaeologists both benefit from interaction with local communities and also debate with local scholars? Engaging with local scholars can sometimes require walking a fine line between imposing foreign values in a colonizing manner and accepting ideas that are either incorrect or that promote oppression and inequality. Theoretically-informed social archaeology can help us engage with local scholars with respect and debate their ideas with the goals of promoting social justice, and without the colonizing effects of imposing ideas on others. In this presentation I will examine how Elizabeth Brumfiel debated a local scholar during our field season in 2007 for promoting ideas that she considered sexist in a public forum. The example shows that the usefulness of archaeology need not be immediately apparent from the moment of research design for archaeology to be socially relevant. The example also shows that grounding knowledge in social theory and in the details of substantive cases can be used to debate and change oppressive ideas in the present without falling in the imposition of ideas associated with colonialism.

[5] *Discussant*

Rodriguez, Rodolfo [56] see Ghezzi, Ivan

Rodriguez, Yasha and Paola Schiappacasse

[141] *Legal Analysis of the George Latimer and Agustin Stahl Collections: Can We or Can't We Reclaim, That's the Question!*

In 1874, upon his death, George Latimer bequeathed his collection of archaeological artifacts from Puerto Rico to the Smithsonian Institution in Washington, DC. In the early twentieth century Agustin Stahl sold his collections to the American Museum of Natural History in New York City. For many decades archaeologists have hoped to be able to request the return of archaeological collections of Puerto Rican pre-Colonial artifacts located in museums within the United States. These two collections are used as a case study in which we analyze the legal framework and legal arguments that could be made in a formal request. The first part of this presentation will delineate a brief history of the Latimer and Stahl collections in order to address their provenance, their potential relationship to well documented sites within the island, and their importance for archaeological interpretation. The second part will analyze the legal status of those two collections at the time of their acquisition by the museums and the legal arguments and/or precedents that could form the basis for repatriation.

Rodríguez, Freddy [122] see Bernal, Marcela

Rodríguez, Carol (Pontificia Universidad Católica del Perú)

[205] *Ceramic Ware as an Expression of Art, Ritual, and Cultural Identity: The Case of the Cerro De Oro Bowl*

This research focuses on the analysis of one of the most common and representative types of bowls identified at the archaeological site of Cerro de Oro (Cañete Valley, Perú). According to prior morphological and stylistic analysis, we have determined that this type of bowl was the preferred support for the display of geometric and figurative iconographic representations recording its variations throughout time. Taking this apparent preference into account, this talk intends to analyze the contexts of origin of such vessels. Preliminarily, we believe that its role as a service vessel goes beyond the everyday use and is related to rituals that involve feasting and celebrations of great magnitude. In addition, its location in different archaeological sites surrounding the valley suggests its possible use as a symbol of cultural identity and as the expression of a unique style in formation.

Rodríguez Suárez, Roberto [220] see Chinique De Armas, Yadira

Rogers, J. Daniel (Smithsonian Institution) and Wendy Cegielski (Arizona State University)

[4] *The Role of Agent-Based Modeling in Archaeology*

Published applications of Agent-Based Modeling (ABM) in archaeology have tripled within the last five years. However, the scope of the research topics investigated has not increased accordingly. A consensus exists among ABM practitioners, that once generally accepted in archaeology, ABM can make revolutionary advances within the overall research paradigm. Within the archaeological community unresolved concerns center on whether ABMs are sufficiently grounded in empirical data, are aligned with theoretical trajectories, and on the difficult task of mastering the computational systems. It is worth exploring these aspects of the disjuncture between the mainstream and ABM practitioners for two reasons—to frame a discussion of qualities of ABM that make it transformative and to provide guidelines for broadening ABM's applicability.

Rogers, Michael (Southern Connecticut State University) and Sileshi Semaw (Centro Nacional de Investigación sobre la Evolución)

[22] *The YAS-1 Middle Stone Age site at Gona, Afar, Ethiopia*

Tentatively dated to MIS 5/4, the YAS-1 (Ya'alu South 1) site at Gona, Ethiopia is a high-density open-air archaeological site preserving classic Middle Stone Age (MSA) stone tools such as Levallois cores, points, and blades in addition to a variety of fossil fauna, some with bone modifications including cut marks. While most of the archaeological material has been found on the surface over the last ten years, recent excavations have documented both lithics and fauna in situ. Though the zooarchaeological remains and depositional context of the site will be discussed, the emphasis here will be on the lithic assemblage, which includes Levallois points, Levallois blades, Levallois cores including asymmetrical discoids or "Aduma cores," prismatic blades, blade cores, and a small number of retouched tools. Both obsidian and silicates (mainly cherts) were used to manufacture both points and blades. Ongoing and future research at the site will hope to refine the site's age, identify the obsidian source(s) of the obsidian artifacts, and expand the excavated archaeological sample.

Rogers, Thatcher

[64] *Spatiotemporal Trends in Ceramics and Architecture in Domestic Paquime, Chihuahua, Mexico*

A recent examination of domestic architecture at Paquime demonstrated support for structural differences present throughout the Medio Period following Di Peso's phases. No known analysis, though, outside of Di Peso's publications has examined the ceramics data to assess whether differences exist between rooms or units. This paper examines the connection between differences in ceramic types and distributions and those present in structural elements of architecture. The broader implications of results provide insight into cultural trends through the Medio period that accompanied sociopolitical transformation.

Rogoff, David (Methodist University)

[54] *Using Archaeology to Pursue Social Justice at Punta Laguna, Mexico*

Over the last several decades, the citizens of Punta Laguna, Mexico have developed a successful ecotourism venture in the spider monkey preserve in which they live. However, recent challenges to the usufruct agreement through which the preserve operates have jeopardized the future of the community's business. At present, the archaeological site of Punta Laguna, which lies within the preserve's boundaries, is little more than a passive backdrop to other tourist activities. We propose developing an archaeological project that serves the academic community by documenting a Postclassic Maya center, while simultaneously serving the local community by expanding their tourism services and providing additional support for their land rights.

[54] *Chair*

Roksandic, Ivan (University of Winnipeg)

[220] *Potential Early Connections Between the Greater Antilles and Lower Central America in the Light of Toponomastic Analysis*

This presentation looks at the patterns of interaction in the Western Caribbean at the time of early migrations onto the islands, with a special focus on the potential long-distance connection between Lower Central America and the Greater Antilles indicated by several important observations: a recent comparative study of ancient DNA from the pre-contact site of Canimar Abajo in western Cuba; circulation of some plant species (e.g., pollo maize; *Zamia*); the practice of dental modification on skeletal remains from Canimar Abajo, previously not identified among Pre-Columbian Caribbean groups; and a recent bathymetric reconstruction indicating that the sea levels in the period from 8000-4000 BP were 5-8 meters lower than today exposing a number of small islands over the Nicaraguan Rise. In that context, toponomastic analysis of several groups of place names from western Cuba, commonly interpreted as either Island Arawak or Warao, shows that they actually display recurrent morphophonological structures similar to Chibchan languages spoken in Lower Central America and Colombia.

Roksandic, Mirjana [220] see Chinique De Armas, Yadira

Rolleri, Lucas [37] see Johnston, Cheryl

Romain, William (The Ancient Earthworks Project)

[17] *The Milky Way Path of Souls and Adena-Hopewell Earthworks*

In this presentation I consider Adena-Hopewell earthworks from a relational perspective. For decades, archaeologists have focused on individual sites. But what if it was found that the significance of certain sites unfolded in their relationships to other earthworks as well as other dimensions? In this presentation I use LiDAR imagery, archaeoastronomic analyses, and ethnohistoric data to explore the idea the Newark Earthworks, Great Hopewell Road, Mound City, Serpent Mound, and others were part of a dynamic relational web related to the Milky Way Path of Souls and journey of the soul to the Land of the Dead. Each site 'did' something in the sense of enabling, facilitating, guiding, constraining or otherwise affecting the movements and experiences of people, living and dead along the Milky Way Path. The sites considered span a distance of about 89 miles (143 km) across south-central Ohio. As such this relational network may be one of the world's earliest and longest metaphorical representations of the journey of the soul after death.

Romano, Francisco, Sergio Castro (Universidad Nacional de Colombia) and Sergio González (Universidad Nacional de Colombia)

[97] *Regional Demographics: Growth, Mobility and Development in the ancient populations of Cundinamarca and Boyacá Regions, Colombia, South America*

This paper deals with population dynamics and changes in ancient pre-Hispanic societies settled in the regions of Villa de Leiva, Fuquene and Funza from the Cundinamarca and Boyacá Basin, Colombia, South America. Based on these three different regional datasets, this research wants to contribute to analytical modeling development in order to understand population dynamics. Since a comparative perspective among nearby regions we accounting for substantial variability in demographic past behavior of mobility dynamics, population growth and development that led to differential settlement patterns, social institutions and social organization change. Unevenness results in the range of demographic behavior among these three sequences of regional change question the apparent homogeneity of social and institutional development in ancient societies that inhabited the Cundinamarca and Boyacá basin.

Romero, Danielle, Barbara Roth (University of Nevada, Las Vegas) and Darrell Creel

[267] *Archaeological Investigations at the Elk Ridge Site, Mimbres Valley, New Mexico*

Recent excavations conducted by the University of Nevada, Las Vegas in conjunction with the Gila National Forest Service took place at the Elk Ridge Ruin, a large Classic Period (A.D. 1000–1150) pueblo in the Mimbres River Valley, New Mexico. This project was done as part of mitigation efforts to protect the site from flood waters in an arroyo that cut through the western portion of the site. Excavations were done in three pueblo rooms that were positioned along the arroyo cut and were the most threatened by future flooding episodes. Despite the fact that portions of these rooms had been previously eroded, recovered artifact assemblages were complete enough to yield interesting information on the occupation of the pueblo. Analysis of floor assemblages including ceramic vessels and groundstone shed light on domestic household activities and possible activities related to the ritual closing of one of the rooms. Architectural and artifact data from the largest room documented numerous floor adobe applications and episodes of remodeling in which doorways and a vent had been sealed or modified reflecting construction/alterations of adjoining rooms over time. This poster summarizes the findings from the first year of excavation.

Romero Padilla, Laura Angélica (Laura Romero Padilla)

[136] *El paisaje, la memoria y los sentidos: ritos de iniciación en el complejo templo-cueva del Kisim en el sitio de CALICA, Quintana Roo*

Gracias a las evidencias reunidas por la recién impulsada arqueología de cuevas se ha demostrado una constante, entre la interacción de estos espacios, con las diferentes esferas de la sociedad maya, llámese política, económica o religiosa. Pareciera un elemento indisoluble y no podía ser de otra manera porque las cuevas formaron parte del paisaje, incluso antes de la presencia humana. Fueron los primeros refugios de los hombres, el habitar cotidiano que el tiempo transformó en lazos. Es precisamente ese vínculo el generador de una memoria y un conocimiento sobre la esencia de estos espacios. La caverna del complejo templo-cueva del Kisim en el sitio de CALICA, Quintana Roo es un ejemplo del paisaje vivido. Esta propuesta sugiere que los mayas realizaron el recorrido con el fin de impregnarse de la esencia misma de la cueva a través de una experiencia sensorial como parte de un rito iniciático que culminaba en el templo. El paisaje entonces se muestra como una compleja red social donde fueron entrelazados memorias, vínculos y experiencias, emanando incluso de las entrañas de la tierra.

Roney, John R. [168] see Hard, Robert

Rooney, Matthew (University of South Florida)

[213] *Investigating Alternative Subsistence Strategies among Homeless Individuals in University, Hillsborough County, Florida*

Homelessness is one of the most pressing social and political issues of our time. At least 570,000 people in the United States currently experience homelessness, and at least 175,000 of these live in unsheltered locations, which implies both exposure to weather and inadequate access to drinking water and sanitation resources. Most rehabilitation programs focus on returning such individuals to "normal" productive society, but research shows that many have abandoned wage labor and are instead pursuing urban foraging as a subsistence strategy. Therefore, in order to better understand contemporary homelessness and inform programs and policies, combined archaeological and ethnographic studies of material culture and foraging patterns among the urban homeless are necessary. This paper contains the results of research on this subject, focusing on a small area of Hillsborough County, Florida, that contains a high rate of homelessness. The question that drives this research is: how do homeless individuals survive using alternative subsistence strategies? The researcher used both archaeological surface survey of camp sites and participant mapping to provide answers to this question.

Roop, Tobin [208] see MacDonald, Douglas

Roosevelt, Christopher H. [184] see Plekhov, Daniel

Rorabaugh, Adam (Drayton Archaeological Research)

[272] *Credibility Enhancing Displays and the Changing Expression of Coast Salish Social Commitments*

Recent developments in evolutionary psychology expanding on signalling theory provide key insights to the connections between expressing social commitments and resource rights. Credibility enhancing displays (CREDs) are a means to convince individuals of commitment to belief systems and can link costly acts or extravagant displays to social success. In the Salish Sea the transition from labrets to cranial modification from 3200–1000 B.P. has often been framed in terms reflecting a shift from achieved to ascribed social status. Other researchers have argued that labrets may reflect village scale identity not tied to political power. We suggest that an explicitly evolutionary approach provides novel insights into the changing material expressions of Coast Salish social commitments, specifically reciprocal resource access. The shift to cranial modification reflects increased CRED investment and cost, but not necessarily a transition towards ascribed status but instead may be changing expressions of the same forms of social commitments.

[272] *Chair***Rosado Ramirez, Roberto (Northwestern University) and Jessica Harrison****[238]** *Occupational History of Three Ancient Maya Saltworks in Paynes Creek National Park, Belize*

In this poster, we present the results of archaeological research at three currently submerged Classic Period Maya saltworks in Paynes Creek National Park, Southern Belize. Through the study of marine sediment columns, we document environmental and anthropogenic changes over time at these locations. By conducting macroscopic analysis, loss-on ignition, and microscopic characterization of marine sediment samples, we were able to identify the effects of human activities as well as sea level rise on the surrounding mangrove forest. These data, in conjunction with material cultural remains, provide insight into human-environment interaction in vulnerable coastal contexts, as well as the impacts of environmental change on Maya sites abandoned at the end of the Classic Period.

Rosales, Erika [168] see Sandoval, Cindy

Roscoe, Paul (University of Maine)**[52]** *On Losing One's Head in New Guinea: Head Rituals among New Guinea Hunter-Gatherers and Fisher-Foragers*

Although commonly thought of as a land of horticulturalists, contact-era New Guinea was home to a number of 'simple' hunter-gatherer and complex fisher-forager groups. This paper surveys what we know of how these communities treated the human head in mortuary and other rituals and the cosmological contexts in which these rites were embedded. The fisher-forager cases are of special interest because at contact they were all head-hunters, an activity that generated elaborate ritual complexes associated with growth, initiation, fertility, and entropic fluctuations in the local universe.

Rose, Nicole (The Graduate Center of the City University of New York)**[150]** *Scaling Down: Kalmyk Steppe Pastoralist Strategies and Small-Scale Migration*

A key theme in both archaeological and historical research of the Eurasian steppe has been the practice of pastoral nomadism. Researchers have particularly focused on issues of mobility within this economic strategy. Perhaps due to academic preoccupation with origins and the attractiveness of both grand-narratives and historical analogy, large scale migration has received a lot of academic and popular attention. However, pastoral nomadism as an economic strategy often only employs small-scale migration and/or seasonal migration due to resource pressures. This paper explores some of the archaeological and physical anthropological research conducted by the Steppe Expedition of the State Historical Museum of Moscow, narrowing the focus to a single region for more intensive analysis. Such research highlights these smaller-scale nomadic strategies employed by the pastoralist groups of the Kalmyk steppe in Bronze Age and Early Iron Age Russia. This research builds on the study of the stratigraphy and planigraphy of the kurgan cemeteries that make up most of the archaeological record of the region of Kalmykia, as well as the burial package, pollen, and isotopic data which emerges from individual burials. The possible contribution of non-morphological ceramic data to further explore these nomadic economic strategies will also be considered.

Rosell, Jordi (URV-IPHES), Ruth Blasco (Departament de Prehistòria, Universitat Autònoma d), Florent Rivals (URV, IPHES, ICREA, Tarragona, Spain), M. Gema Chacón (URV, IPHES, Tarragona, Spain-Département de Préhis) and Andrea Picin (Department of Prehistory and Early History, Friedr)**[278]** *Changes in Occupational Patterns during the Middle Paleolithic: The Case of Teixoneres Cave Unit III (MIS 3, Moià, Barcelona, Spain)*

The aim of this work is to contribute to the debate about Neanderthal behavioral diversity from the Middle Paleolithic site of Teixoneres Cave (MIS 3, Barcelona, Spain). During the formation of Unit-III, the landscape was dominated by a deciduous forest with wet meadows and a progressive climatic tendency toward cooling and aridity. The alternation between large carnivores and human groups marks the upper part of the unit. In this sub-unit, human occupations correspond to small groups that sporadically used the cave during their transit through the territory; such occupations include isolated hearths at the entrance of the cave, a significant balance between exogenous and autochthonous raw materials, the use of previously configured supports and the occasional processing of ungulates and small prey. However, this dynamic changes at the bottom of the unit. In this case, the presence of carnivore activities decreases, and a higher human occupational stability occurs, shown by higher indices of autochthonous raw material, more complexity in the knapping activities and a high diversity of processed prey. These modifications in the occupational patterns could be the consequence of adaptation to the new climatic conditions, an alteration of the human traditions in the territory or a combination of both.

Rosenfeld, Silvana (University of South Dakota)**[122]** *Food preparation and status: ch'arki versus roasting at Chavin de Huanter*

Based on the chronicles and ethnohistorical documents, the consumption of (more) camelid meat has been linked to groups of high status or rank in the Andes. However, were all camelid dishes created equal? At the site of Chavin de Huanter, previous (Miller and Burger 1995) and recent zooarchaeological investigations provide evidence for the consumption of ch'arki (traditional way to dry meat on the bone) and the consumption of roasted meat in different areas. Can the particular preparation of camelid meat be a factor for social distinction? Can we link a distinctive cuisine with certain activities at the site? Preliminary data suggest a complex picture: Ch'arki appears associated with areas of lithic tool manufacture, while roasted meat appears associated with bone tool manufacture. Many of the bone tools have been interpreted as part of hallucinogenic plant consumption paraphernalia, thus possible linking this area to a middle or high status artisans. The unelaborated lithic tools manufactured in the area associated with ch'arki could suggest a low rank population. It appears that the specialized craft production in Chavin was also associated with particular ways of consuming camelid meat in which fresh meat symbolized a higher social status than dry meat.

Rosenswig, Robert (University at Albany)**[235]** *The Izapa Polity*

Long-known as an important Late Formative political center, Izapa was one of a string of early states extending down the Pacific coast from Chiapas to El Salvador. Izapa's extensive sculpture, part of a pan-regional public art style, demonstrates ties with both the Guatemalan Highlands and Isthmian traditions. Philip Drucker first brought Izapa to world attention during the 1940s in the pages of National Geographic Magazine. In the 1960s, the New World Archaeological Foundation (NwAF) established a ceramic chronology and produced wonderfully detailed maps and drawings of the monumental architecture and sculpture that define the site core. Yet, despite these early efforts, surprisingly little is actually understood about the organization of the Izapa state. This poster reports the results of 300 sq km of lidar data that map out the location, layout and orientation of Izapa itself as well as over three dozen lower order centers. Together these data lay-out the Izapa polity in its entirety.

Rossen, Jack [90] see Watson, Jessica

Rossen, Jack (Ithaca College), Mahealani Pai (Kamehameha Schools), Keonelehu Kalawe (Kamehameha Schools) and Brooke Hansen (Ithaca College)**[227]** *Collaboration and Indigenous Archaeology at Maluaka on the Big Island of Hawai'i*

A collaborative archaeological project on the Big Island of Hawaii involves excavation and intensive water flotation to recover plant remains at Maluaka, a ten acre parcel of the North Kona agricultural field system above Keauhou traditionally known as the Kuahewa. The work is conducted in collaboration with Kamehameha Schools, a private charitable educational trust endowed by the will of Hawaiian Princess Bernice Pauahi Bishop (1831–1884). The project involves linkages with elementary, intermediate and high school students, and at-risk youths. The long-term goal is to revitalize the ancient agricultural terraces and platform system, utilizing Native knowledge and fine-grained archaeological and archaeobotanical data to understand spirituality, technology, layout, and plant patterns at the site. This paper describes the project and the process and results of the 2015 test excavations.

Rossi, Franco (Boston University)**[15]** *Making and Keeping Secret Knowledge at Xultun, Guatemala*

As repositories for scientific secrets and ritual expertise, the four extant Maya codex books have proven an indispensable source for understanding ancient systems of religion and socio-political thought. But despite the undoubted existence of codex books during the much earlier Late Classic period (600–900 C.E.), the tropical climate's decay-inducing effect on organic material has thus far prevented their recovery in the archaeological record. In this paper, I discuss the Los Sabios mural at Xultun as a window into earlier codex traditions. The texts on the Los Sabios mural are distinctly akin to those found in these codex books—detailing highly similar forms of seasonal and astronomical data inscribed in minute characters. As such, the Los Sabios mural texts not only constitute one of the closest artifacts we currently have to a Classic period codex, but also reveal previously unknown ties between the practice of mural making and that of codex making.

Rostain, Stéphen (PhD. National Center for Scientific Research, France)**[263]** *Amazonian Mounds. When Human Sciences Met Earth Sciences*

Because the subject of the archaeological study disappears nowadays and exists only as traces, it is necessary to diversify the points of view to comprehend the past. The interdisciplinary approach helps to interpret better the human and natural components of the environment. On the basis of two Amazonian cases, from French Guiana and from Ecuador, it will be shown how cooperation between various disciplines improves considerably the interpretation.

The first case concerns thousands of small mounds found along the Guianas coast. They are remnants of an agricultural technique widely used in flooded areas during the late precolumbian Period. The Guianas coast has a long history of human impact and the actual landscape partially results of a millenary cultural action. The multiplicity of expertise completed successfully to a general understanding of these structures.

In the Upper Amazon, the Sangay site of the Upano Valley is famous for hundreds of artificial mounds. More to the north, on the Pastaza bank, the Zulay site presents various small hills that were also commonly considered human-made. It is true that pre-Columbian communities lived sometimes on their top, but our recent interdisciplinary project proved their natural origin.

[23] *Discussant*

Roth, Barbara [64] see Ferguson, Jeffrey

Rousseau, Jane [284] see Morgan, Michele

Rowe, Timothy [65] see Huckell, Bruce

Rowe, Robert**[155]** *Mammoth and Mastodons....They are what's for Dinner*

The Pleistocene...basically a no-man's time that is stuck between the disciplines of archaeology and paleontology when it comes to the animals that inhabited that period of time. For American archaeologists, they are often old, sometimes too old to consider them as having archaeological connotations. For Paleontologists, these are not fossils and by some paleontologist's standards are considered too young for paleontological studies. It is important to archaeologists to understand these animals and the role that they played on the landscape. In doing so these animals shape the human condition by causing adjustments in environmental niches that the humans hunt and function in. Each of these large now-extinct animals, mammoth, mastodons, camelops, and many others had their particularly environmental needs. Using field examples from Iowa, Colorado, Montana, and Wyoming the remains of these animals can be used to ascertain the environment that each lived in and in doing so this data can be used to widen the studies of the prehistoric environment in which you find the earliest of humankind in the Americas.

Rowsell, Keri [84] see McGrath, Krista

Rubertone, Patricia

[128] *Archaeological Histories of Urban Indians and Why They Matter*

Social archaeology today takes research far beyond questions of "subsistence and dating." It pushes inquiries into historic and recent pasts and is unapologetic in its embrace of anthropologically-informed, hybrid methodologies. Not in the least, it maintains a keen awareness of the role that socially-engaged research can play in the contemporary world. Since the 1990s, multifaceted and collaborative archaeological studies of Native Americans have systematically challenged dominant, and damaging, narratives about their colonial experiences. Providing compelling evidence for Native persistence that allows for change, this research comments on the complex realities of practices of survivance that created presence over absence, renounced domination, and rejected victimry, and thus, involved more than instincts of survival and subsistence. Ongoing research on indigenous communities of diverse ancestry in late nineteenth and early twentieth century New England contributes to understanding how issues of race, authenticity, and urban renewal were used in attempts to erase them from the landscape. Their efforts to maintain an Indian presence in modern, urban contexts is the next chapter of Native survivance to be written, and one that has important implications for tribal groups in the region still striving for federal recognition.

Rubin de Rubin, Julio [167] see Silva, Rosicler

Ruby, Bret (National Park Service, Hopewell Culture National Historical Park)

[34] *Ground Truthing The Great Circle and other Big Data Anomalies at the Hopewell Mound Group*

The monumental mounds and earthworks at Hopewell Mound Group have attracted attention since the dawn of American archaeology. By the early twentieth century, the site's imposing earthworks, exotic raw materials, and exquisitely crafted artifacts were widely recognized as the most flamboyant expression of a newly defined "Hopewell culture." Yet attention was focused narrowly on mounds and mortuary contexts, ignoring the vast spaces in between. Agricultural plowing steadily eroded above-grade features. Today, most visitors experience the site as a featureless plain. However, recent large-scale geomagnetic surveys successfully documented the subsurface integrity of many plowed-down mounds and earthworks, and revealed a host of anomalies both large and small filling the spaces between the monuments. This presentation describes the results of two seasons of targeted excavations intended to ground truth several intriguing anomalies. One focused on the "Great Circle," a circular earthwork nearly 120 meters in diameter thought to have been entirely obliterated by plowing before 1891. Our excavations revealed a deep encircling ditch flanked on the interior by a row of deep pits that likely supported huge wooden posts—an enormous Hopewell "woodhenge." The second season revealed a gigantic but enigmatic pit feature with an estimated volume approaching 15 cubic meters.

[34] *Chair*

Rudolph, Nigel (Florida Public Archaeology Network - CRC) and Jeff Moates (Florida Public Archaeology Network - CRC/WCRC)

[260] *Collaboration in Progress: FPAN Central Regional Center and the Florida Park Service.*

Among the many places that the Florida Public Archaeology Network (FPAN) uses as a base of operation, the relationship the Central Region has with the Crystal River Archaeological State Parks is unlike any other. Housed within the visitor's center at the Crystal River Preserve State Park, FPAN's Central Region is the only regional center located at a National Historic Landmark prehistoric mound complex. This provides the center with a unique opportunity for outreach, education, and promotion of this important site and the compatible mission of the Florida Park Service. The distinct relationship comes with distinct successes and challenges. This paper navigates these opportunities including development of site-based interpretation and collaboration on existing State Park programs. Also considered are challenges such as working within the bureaucratic framework of the Florida Department of Environmental Protection and ethical considerations necessary at a prehistoric mound complex.

Rudolph, Nigel [260] see Gidusko, Kevin

Ruehli, Frank [223] see Warinner, Christina

Ruff, Alexander [134] see Mathwich, Nicole

Ruhl, Donna (Florida Museum of Natural History)

[7] *Ancient Watercraft on Changing Landscapes*

This poster is a summary of the results of a multiyear study of drought-exposed dugout canoes, oral histories, steward-preserved dugouts, and revisited extant canoe collections, coupled with many new radiocarbon dates on these heretofore unstudied canoes. Along with dugout dates, location and quantities have revealed additional insights about mobility, paleoenvironment, waterscapes, settlement change, economies, and overall significance of these underrepresented yet unique artifacts. Modern and paleohydrological studies of sea level impact on coastal shorelines have neglected this impact on interior waterways, flow and water tables. Beyond the enhanced understanding of the significance of dugout canoes, dates are corroborating sea level rises and declines to canoes presence and absence in interior areas and raising further questions regarding settlement patterns through time, migration, transportation, paleoenvironment, paleohydrology, and lifeways in and around Florida's ancient waterways.

Rühl, Frank J. [103] see Viganò, Claudia

Ruiz perez, Javier [125] see Lancelotti, Carla

Runggaldier, Astrid [221] see Harrison-Buck, Eleanor

Russ, Jon [6] see Hunt, Ryan

Russ, Jon (Rhodes College), Karen Steelman (University of Central Arkansas), Marvin Rowe, Chris von Nagy (Florida State University) and Mary Pohl (Florida State University)

[230] *Chemical and Radiocarbon Analyses of Paint Samples from Oxtotitlán*

The prehistoric rock paintings in the Oxtotitlán site are thought to be among the earliest of Mexico and represent the beginning of the highly influential Mexican muralism tradition. The proposed antiquity of the murals is based primarily on stylistic interpretation of the motifs represented in the paintings. Our objective was to use radiocarbon analyses of organic matter in the paint and biofilms covering paint layers to provide more direct evidence as to the ages of the artifacts. Small paint chips were collected from three murals, including a black and red shield image, a deteriorated area without a decipherable motif, and from the polychromatic Raptor Lord Mural (C-1 Mural). Non-painted surfaces adjacent to the paintings were collected to provide background information. Two strategies were used to determine or constrain the ages of the artifacts. First was the extraction of organic carbon directly from the paint using a low-temperature oxygen plasma, converting it to carbon dioxide that was cryogenically isolated for the AMS radiocarbon analysis. Second, in cases where the paint did not contain datable organic carbon or the background deemed too high, we radiocarbon dated the calcium oxalate biofilm covering the paint to provide a minimum age of the artifact.

Russell, Bradley [26] see Masson, Marilyn

Russell, Bradley (College of Saint Rose) and Kendra Farstad (University at Albany - SUNY)

[27] *Ethnoarchaeology of a Three Generation Yucatec Maya House Compound*

Since our team began work at the Ancient Maya political center of Mayapán (1150–1450), we have increasingly relied on insights derived from working with the modern residents of the nearby village of Telchaquillo, Yucatán. We have successfully applied the Direct Historical Approach to explore the function and remains of house groups, food production, lime plaster production and ritual activity. During the 2015 season of the Economic Foundations of Mayapán Project, we had the opportunity to document a diverse and complex house group that had been home to multiple generations of the same family. We recorded and mapped numerous structures within the compound including multiple homes and associated residential structures occupied over the past 80 years, features related to livestock production and other domestic activities. We also recorded an impressive array of trees and plants producing a wide variety of agricultural and other products. We recorded family histories and linked them to the remains, revealing shifting land use patterns within the compound over time. This paper will present our initial findings of the study and discuss how the results relate to archaeological features and remains that we have spent the past 15 years recording at the nearby ancient center.

Rutecki, Dawn (Indiana University)

[240] *Food and Religious Practices at Spiro: Implications for Understanding Social Complexity*

Recent reanalyses of the Mississippian Ideological Interaction Sphere have invoked reinvigorated, multi-dimensional research that examines symbolism, social organization, and subsistence practices. Through a reanalysis of faunal remains from Spiro Mounds, OK, this paper interrogates the presence of faunal remains and materials to better contextualize their use through a lens of concurrent religious practices at the site from C.E. 1000–1400. By contextualizing the remains within broader discussions of images on ritual paraphernalia, I argue that use of these animals both as subsistence and symbolic markers provides a more useful way to understand the entangled worldviews of this community, while providing insight into how religiously influenced food practices may have impacted social organization.

[5] *Moderator*

[186] *Discussant*

Ruuska, Alex (Northern Michigan University)

[175] *Shamanistic Rock Art Motifs: Dynamic and Emplaced Performances of the Sacred among the Ojibway*

The Ojibway on the northern and southern shores of Lake Superior of North America created transitory as well as relatively permanent material expressions of sacred experiences and cultural narratives. Using examples of 'spirit objects' expressed via emplaced pictographs in the landscape in Ontario Canada and the Upper Peninsula of Michigan, Mide'wiwin birch bark scrolls, and culturally modified 'storied' trees, this paper compares and contrasts dynamic and emplaced expressions of the sacred, and the interplay between the two. In process, I explore the role of 'spirit objects' in marking places, promoting a sense of the cultural past, emplacement and displacement, and "ancestral memory."

Ryan, Susan (Crow Canyon Archaeological Center) and Rebecca Simon (Crow Canyon Archaeological Center)

[40] *Beyond Excavation and Laboratory Work: New Directions in Crow Canyon Archaeological Center's College Field School Curricula*

The Crow Canyon Archaeological Center was created in 1983 to advance and share knowledge of the human experience through archaeological research, education programs, and partnerships with American Indians. Since its creation, over 70,000 students and adults have participated in the Center's innovative experiential education, research, and travel programs. Crow Canyon's programs vary in a number of ways in order to highlight different aspects of its tripartite mission. In 2015, Crow Canyon launched its first college accredited archaeological field school. This poster presents information on how the Center's mission influenced the unique development of the field school's graduate and undergraduate curriculum and, in turn, how it is anticipated to influence students entering the discipline. This poster provides information on curricula utilized during Crow Canyon's field school that promotes archaeological ethics, public outreach, independent research, collaboration with descendant communities, multi-vocal learning, and service learning in addition to traditional archaeological method and theory provided in field and laboratory settings.

Ryan, Ethan [124] see Barnett, Kristen

Ryan, Philippa (The British Museum)**[177]** *Cereals and Agricultural Risk Management in northern Sudan, Past and Present*

Nubian agricultural practices are rapidly altering due to infrastructure development, as well as technological and environmental changes. We have been interviewing Nubian farmers about crop choices, land-use and irrigation. Farmer interviews have focused on a car- and electricity-free Nile island, Ermetta, where many 'traditional' practices have continued for a comparatively long time. We are also interviewing farmers in other villages throughout the north to understand variability. This research is part of a broader project "Sustainability and subsistence systems in a changing Sudan" (funded by the AHRC 2013–2016) which compares present-day and ancient crop choices to investigate agricultural risk management within Nile settlements. Managing risk can include using a diverse range of crops with different growing tolerances and land-use strategies. In this paper, we will discuss changes in cereals grown and agricultural practices over the last century, as well as land-use and irrigation in Nubia. By examining which crops or practices are considered 'traditional', we are forming reference points from which to make comparisons with the archaeological record. Amara West (1300–800 B.C.), an ancient Nile Island town, will be discussed as a case study.

Ryzewski, Krysta (Wayne State University)**[48]** *Discussant***Sabloff, Jeremy (Santa Fe Institute)****[54]** *Discussant*

Sabol, Donald [110] see Buck, Paul

Safi, Kristin (Washington State University) and Andrew Duff (Washington State University)**[194]** *Exchange and Resource Procurement During the Chaco Era in the American Southwest*

The great houses of Chaco Canyon and the similar monumental buildings scattered across the northern Southwest during the Pueblo II period (A.D. 900–1150) are often discussed in terms of a regional system. One aspect of recent research is evaluating the movement of goods between great houses as an indication of the degree to which these communities were well integrated into a social or economic system. This paper examines patterns of non-local resource procurement and exchange among three great house communities in the southern Cibola sub-region using obsidian and ceramic compositional data. We analyze samples from great house and non-great house contexts to delineate patterns of resource access or exchange that indicate participation in a broader economic or social system. Our results suggest two patterns of resource movement. First, access to long distance obsidian varied widely and does not appear to have been controlled by great house occupants. In contrast, exchanged ceramics were present in higher proportions at great houses, with household sites mirroring their associated great house in the source community for non-local wares. Access and exchange relationships were also maintained with non-great house communities, suggesting a more complex socioeconomic picture of the Pueblo II Southwest than was previously understood.

Sagebiel, Kerry**[109]** *Discussant***Sahle, Yonatan (Center for Advanced Study, University of Tübingen, GERMANY)****[22]** *Late Pleistocene Behaviors: Perspectives from the Middle Awash, Ethiopia*

Behavioral contexts across the critical period associated with the evolution and successful dispersal(s) of anatomically modern humans (AMH) within and beyond Africa are inadequately understood. Although the genetic and fossil evidence in hand largely advocates eastern Africa as the most likely source and dispersal route of AMH, the sparseness of archaeological evidence relevant to this period limits behavioral inferences from the region. As a result, evidence for behaviors considered "modern" derives predominantly from South African occurrences, making an exhaustive study of the behavioral contexts of AMH in eastern Africa long overdue. Here, we present results of work to date on Late Pleistocene occurrences in the Middle Awash study area of Ethiopia, including analyses of lithic assemblages from Aduma and Halibee that have been found in association with rich faunal remains and AMH. The spatial and chronostratigraphic positioning of these and other MSA occurrences provide a unique opportunity to examine technological and behavioral trends during the period 50–100 ka. The results have implications for hypotheses about Late Pleistocene AMH dispersal(s) and their relationships to cultural, physical, and biological factors in this crucial part of Africa.

[22] *Chair*

Sahle, Yonatan [22] see Brandt, Steven

Sain, Douglas (University of Tennessee)**[159]** *Pre Clovis at Topper (38AL23): Evaluating the Role of Human versus Natural Agency in the Formation of Lithic Deposits from a Pleistocene Terrace in the American Southeast*

This paper examines the lithic materials from the presumed pre-Clovis deposits at the Topper Site (38AL23), a Paleoindian quarry and stone tool manufacture site in Allendale County, South Carolina. Prior research at Topper identified flakes and possible chipped stone tools from Pleistocene-aged sediments that predate Clovis, traditionally considered the earliest culture complex in the region. The goal of this study is to document the nature of the pre-Clovis assemblage at Topper, and to explore possible ways it may have formed. Did human or natural processes play a role in the production of the reported assemblage? Experimental analyses demonstrate that chert is susceptible to fracture when exposed to episodes of weathering. Natural processes can result in the formation of detachments that resemble the morphological properties of flakes and bend breaks but lack the technological attributes that are characteristic of human lithic manufacture. The presence of technological attributes consistent with human agency on flakes and bend breaks from Pleistocene deposits at Topper support the proposition that these items served a functional role for pre-Clovis occupants at the site. The results of this study present a unique record of the behaviors of Late Pleistocene hunter-gatherers of the southeast U.S.

Sakai, Sachiko [292] see Ozorio De Almeida, Fernando

Sakai, Sachiko (California State University Long Beach)

[292] *Changes in Production and Distribution Patterns of Olivine-Tempered Ceramics in the Arizona Strip and Adjacent Areas*

Artifact assemblages from the Arizona Strip and adjacent area are characterized by widely distributed ceramics tempered with olivine, a volcanic mineral. Sources of olivine lie in the vicinity of Mt. Trumbull and Tuweep, near the northwestern part of the Grand Canyon. The olivine-tempered ceramics were distributed mostly westward from Mt. Trumbull, up to 100 km to the lowland Virgin area in southern Nevada between A.D. 200 and 1350. Ultimately, the goal of this study is to understand why ceramic production and circulation patterns changed during the Ancestral Pueblo occupation of this marginal environmental area. To investigate this issue, fine grained study of change in ceramic production and distribution patterns, by controlling time and space without ambiguous assumptions is necessary. The use of ¹⁴C, however, is not the ideal option in this study, since the many sites in Mt. Trumbull were occupied by multiple generations with very limited ¹⁴C dates, in addition to ambiguity of applying ¹⁴C dating to the ceramics. Thus, in this study, compositional analysis using LA-ICP-MS was combined with optically stimulated luminescence (OSL) dating. This paper will discuss how the use of clay resources changed over time based on the OSL dates of 113 ceramics with compositional data.

[292] *Chair*

Salado, Mercedes [176] see Scheinsohn, Vivian

Salazar, Lucy, Richard Burger (Yale University) and Michael Glascock (University of Missouri)

[57] *The INAA Analysis of Pottery from Machu Picchu: An Initial Assessment*

This paper presents the results of INAA analysis of pottery recovered at Machu Picchu by the 1912 Yale Peruvian Scientific Expedition directed by Hiram Bingham III. Samples of ceramics representing the full range of forms and from a diversity of sectors at the site were studied in the Archaeometry Lab at the University of Missouri Research Reactor (MURR) and compared with coeval Inca pottery from other sites in the Urubamba Valley and from the Cuzco Basin. The study considers whether the Machu Picchu ceramics were produced locally or brought from the capital and whether there is evidence for long-distance imports of pottery.

Salazar, Diego [76] see Olguin, Laura

Salazar, Diego (Universidad de Chile)

[259] *Copper Rich, Water Poor: The Southern Atacama under Inka Rule*

The hyperarid and thinly populated Atacama area of northern Chile seems an unlikely target of imperial interest. However, archaeological research has demonstrated direct control over this territory and its people by the Inka, who were drawn to the region by rich copper deposits that have been exploited at least since the Late Archaic (4500 B.P.). How did the Inka reorganize copper mining technology and labor? How were mining and metallurgical centers provisioned in this agriculturally marginal region? What role did ideology and ritual play in the imperial incorporation and administration of the Atacama and in mining? How was this area integrated into the state's political economy? Historical sources on the region are scarce, but through extensive surveys, excavations and dating programs developed by different research projects during the last three decades, we now have a wealth of archaeological data to begin to address these questions. In this paper we attempt to synthesize this information, discuss transformations under Inka rule, and reflect on imperial expansion and provincial administration in this environmentally and demographically limited, yet copper-rich area.

[259] *Chair*

Saldana, Melanie (California State University Los Angeles)

[294] *The Evolving Nature of Landscape: An Example from La Milpa, Belize*

In 2014, the California State University, Los Angeles Sacred Landscapes Archaeology Project took over the investigation of what appeared to be a sinkhole with a small cave chamber at its northern end. In 2015, excavation was continued to bedrock. Lying on bedrock, was a chultun capstone and examination of the ceiling directly above it disclosed the remains of what had been the entry tube into the feature. The lack of deposition between the ceiling collapse and the floor suggests that the breakdown had occurred shortly after the construction of the chultun. The Maya then encircled the hole left by the collapse with a low plastered platform. Artifact density on the platform and in the hole was high but dropped precipitously only a few meters from the complex. This suggests that the Maya continued what appears to be a fairly intensive utilization centered on this transformed feature.

[93] *Chair*

Saldana, Melanie [93] see Scott, Ann

Saldaña, Julio (Pontificia Universidad Católica del Perú) and Luis Jaime Castillo (Pontificia Universidad Católica del Perú)

[206] *Feasts and Ritual Practices at San Jose de Moro during the Late Moche Period*

San Jose de Moro is an archaeological site with a long cultural sequence of near 1000 years. The first activities performed at this site were funerary, since a high quantity of funeral contexts and remains of ceremonial activity were found. During the Late Mochica Period, the site was used as sepulcher for high rank individuals who performed ritual roles for the development of the society. In the last eight field seasons at the site, three important chamber tombs have been found. They were surrounded by extensive evidence of mass production of food and beverage. Based on this we can assume the realization of important ritual activities that followed the burial of elite characters from the Late Moche society.

In this poster we plan to characterize the nature of the activities that were carried out at San Jose de Moro during and after the burial of the so-called Priests and Priestesses. Also we intend to determine the scale of these activities as well as the way that they evolved through time based on the study of

the stratigraphy from the excavations.

Salerno, Jennifer [83] see Damour, Melanie

Salgado, Carlos [183] see Velasquez, Veronica

Salgado-Flores, Sebastian (University of Texas at San Antonio)

[270] *Political Ecology of Postclassic Maya Plant Use at Lake Mensabak, Chiapas, México.*

This presentation examines a case study of changes in Maya plant use at several closely located sites during the middle-to-late Postclassic Period (~1300–1525 C.E.) at Lake Mensabak, Chiapas, Mexico. These sites were inhabited contemporaneously and exhibit substantive differences in size and political/economic importance, making the archaeobotanical assemblages recovered from them uniquely suited for a study focusing on how they were created by social processes. It specifically examines whether these sites exhibit differences in the range of plants that were brought to and processed at them, and whether/how that variation changed over time. These changes in the assemblages are interpreted not only as indicators of availability external to society, but as indicators of differential access to and incentives for the exploitation of specific resources.

Salinas, Jennifer [122] see Salinas Acero, Jennifer

Salinas Acero, Jennifer (UC Berkeley)

[122] *Changing Food Practices at Tequendama, Aguazuque, and Zipacon (Sabana de Bogotá, Colombia)*

The process of domestication has interested archaeologists working in the Andes for decades but for many years problems of preservation and access to certain analyses have caused a lag in the recovery of concrete evidence. Although, previous research carried out in the 1970s and 1980s at the preceramic sites of Tequendama, Aguazuque, and Zipacon on the altiplano of the Eastern Cordillera of Colombia yielded a wealth of paleoenvironmental, tool use, and faunal data, few botanical remains were recovered from these projects. This research helped create window into understanding the changes in the social and economic practices of these early societies but more recent excavations at these sites have employed a multiproxy paleoethnobotanical approach that includes the collection of column samples for macrobotanical and microbotanical analysis to overcome problems with preservation biases. The supplementation of this new data set to the information that already exists will allow us to explore socio-cultural changes that were occurring during the mid-holocene through the lens of diachronic changes in foodways on the Sabana de Bogotá. By directing inquiry into changing food practices we will begin to understand, not only how these early populations interacted with, but also how they conceptualized, their environment.

[122] *Chair*

Sallum, Marianne and Plácido Cali (CALI, P.)

[70] *Colonial Process in the Portuguese America: Tupi Settlement at the Brazilian Southern Shore*

This represents a preliminary paper about the colonial process in Portuguese America and the development of the historical archaeology of indigenous peoples in Brazil. It uses as reference the archaeological remains of a Tupi settlement, on the south shore of the state of Sao Paulo, called Peruibe. For many years Brazilian historiography built a history of America's discovery and European colonization with indigenous peoples treated as passive victims of colonial encounter, fated to disappearance. In the last decades this perspective was overcome by works that sought to demonstrate the agency of indigenous people in the construction of their own history. Historical archaeology, in turn, dealt with the study of contexts of interrelation between indigenous and colonizers, trying to understand processes of acculturation. In recent years archaeologists have been criticizing this perspective and reevaluating a recent periods of indigenous people. Investigations have been done to show indigenous resistance strategies against colonizer the maintenance of their ways of life when faced with colonialism and capitalism. Therefore, my ongoing research aims to contribute to this new research agenda and, more specifically, to the construction of a critical and post-colonialist history of the Tupi people from the pre-colonial period until the 19th century.

Salyers, Kimberly (University of California, Santa Cruz)

[251] *Entanglement of Memories in Mesoamerica and Applications in the Palenque Region*

As social archaeologists, we have long affirmed the fluidity of social structures, yet we continue to experience proactive interference from the political economy lessons long embedded in our memory. Through the review of social memory applications in Mesoamerica, this paper discusses how the battle between the individual and the social approaches to memory fall victim to our current entanglements of memory. Building from this review, I will consider how incorporating applications of ArcGIS and ceramic analysis in the Palenque Region aim to untangle the views of lowland Maya's political economy and memory.

Sample, Richard A. [78] see Nichols, Kristi Miller

Sampson, Christina (University of Michigan)

[133] *Site Structure, Community Organization, and the Interpretation of Subsistence Remains*

Subsistence strategies shape mobility and site use practices. These relationships can be investigated at a regional scale, but they also appear at the level of daily domestic activities. The interpretation of subsistence remains is enhanced by assessing how specific deposits and activity areas across a site fit into broader strategies and relate to community organization. At many coastal and riverine sites of the American Southeast, mollusk shell is prevalent and well-preserved in midden deposits, along with vertebrate bone and other artifacts. These deposits vary in multiple ways, including vertical and horizontal extent, duration of use, structure of deposit, context of creation, and relationships to other activity areas. This paper focuses on case studies that show how interpreting shell midden subsistence remains in light of site structure and community organization can reveal opportunities to explore issues including

labor, ritual, and the interplay of ecology and cultural practices.

Samson, Alice (McDonald Institute for Archaeological Research) and Jago Cooper (British Museum)

[47] *The Use of Fingers and Hands in Mark-Making in Caves in the Indigenous Caribbean*

The focus of this paper is on the actions of human fingers, hands, and bodies in the emergence and creation of the extraordinary subterranean caves of Isla de Mona in the precolonial and early colonial Caribbean. The interiors of around 30 of the island's 200 caves have been extensively modified by scraping substances off, and applying substances to cave walls, leaving marks, extractive patches, meanders, and designs on hundreds of square metres of cave surfaces. These activities were carried out by indigenous individuals in the dark zones of cave systems, close to water sources, and predominantly with fingers and finger-sized tools.

The extent, location, and composition of the mark-making allows inferences to be drawn about the choreography of the activities, including body position, visual orientation, and gesture. Indigenous bodily techniques strongly contrast with the way Europeans behaved, marked, and moved around these same spaces. This research highlights the differences in indigenous and European traditions of physical engagement with the world, and the transformation of physical attitudes through colonisation.

Samuelsen, John (Department of Anthropology, University of Arkansas)

[286] *Caddo Interregional Warfare or Local Burial Practice: Using Strontium Isotopes from Outlying Sites to Assess Origins and Settlement Patterns of a Skull and Mandible Cemetery at the Crenshaw Site*

The 352 individuals from a skull and mandible cemetery at the Crenshaw site (3MI6) in southwest Arkansas have been argued to represent non-Caddo victims of warfare from other regions. Strontium isotopes taken from 80 individuals were processed as part of a NAGPRA grant and have been used to claim they supported evidence of interregional warfare between the Caddo and the Southern Plains. This paper demonstrates that sampling small animal teeth from surrounding sites can be used to test the hypothesis that the Caddo were instead bringing the dead and deer from surrounding sites for burial and feasting rituals. This simultaneously tests if the Caddo had a dispersed settlement pattern and has implications for their ritual community organization. The results suggest that the Caddo at Crenshaw were most likely expanding the use of skull and mandible burials as they included more distant sites within their ritual community between A.D. 1200 and 1400. This co-occurs with the adoption of maize as a staple, indicating how ritual practices, diet, and settlement patterns interact within the cultural system.

San Roman, Manuel (Universidad de Magallanes), Omar Reyes (Universidad de Magallanes), Javier Cárcamo (Universidad de Tarapacá) and Jimena Torres (Universidad de Paris 1)

[206] *Western Patagonia Subsistence Strategies: Zooarchaeological Studies of Marine Hunter-Fisher-Gatherers of the Chonos Archipelago, Chile*

The Chonos archipelago (43°50'–46°50'S) at the western Patagonian channels of Chile was peopled by marine hunter gatherers known as Chonos. Archaeological occupation spans from 6260 cal years BP unto the eighteenth century. Recently the archaeological record has been described and characterized through surveys, test pits and systematic excavations in different parts of the region.

This work presents a first synthesis of faunal resource exploitation for a range of islands, considering archaeological assemblage characterization, and relation with geographical distribution and chronology. The comprehension of space use strategies are implied from a biogeographical point of view for these groups that inhabited the southernmost South Pacific during the late Holocene.

San Roman, Manuel [207] see Reyes, Omar

Sanchez, Gabriel [132] see Lightfoot, Kent

Sanchez, Gabriel (Department of Anthropology, University of California Berkeley)

[251] *Exploring Traditional Ecological Knowledge in Central California through Ethnographic and Ethnohistorical Records*

This paper explores ethnographic and ethno-historical records of Coast Miwok and Kashaya Pomo peoples in Central California to understand twentieth century memories or traditional ecological knowledge (TEK) of landscape management practices. TEK and traditional resource and environmental management (TREM) practices are entangled with contemporary issues. These include but are not limited to management practices for indigenous communities, state, and federal agencies. Understanding how Native people modified the landscape in the past through historical documents and archaeological research provides a first step for managing contemporary ecosystems.

Sánchez, Rodrigo [259] see Pavlovic, Daniel

Sanchez-Morales, Ismael (School of Anthropology - The University of Arizona)

[67] *The Clovis Lithic Component of Fin del Mundo, Sonora, Mexico.*

Fin del Mundo is a Clovis site located in the north-central portion of the state of Sonora, northwestern Mexico. The site comprises multiple localities including a buried kill of two gomphotheres (*Cuvieronius* sp.), a Clovis camp and raw material procurement areas. The Clovis lithic component at the site consists of Clovis points, Clovis point preforms, bifaces, unifacial tools and a blade industry. The tool types suggest that Fin del Mundo was occupied for a long time span, possibly during several intermittent visits, and indicates that local raw materials were used to manufacture most of the stone tools at the site. At a regional scale, the Clovis lithic assemblage from Fin del Mundo is comparable to those from the Murray Springs, Lehner and Naco sites in the San Pedro River Valley, southeastern Arizona, located ~250 km to the northeast. Fin del Mundo represents an important locality characterized by the availability of animal and lithic resources intensively occupied during the final Pleistocene. It is one of the most extensive and important Clovis sites in Mexico, and extends our knowledge of the Paleoindian occupation of the Northwest Mexico/Southwest USA region.

Sánchez-Morales, Lara (University of Puerto Rico, Río Piedras) and Isabel Rivera-Collazo (University of Puerto Rico, Río Piedras)

[14] *Sediments as Artifacts: Geoarchaeological Analyses for the Understanding of Social Processes and Subsistence Strategies*

Caribbean and Lowland Neotropical archaeology has emphasized the importance of human relations with their environments, from plant and animal domestication to ceramic production, agriculture, and settlement patterns. However, in most excavations, sediments have often been overlooked and simply discarded without further consideration. Sediments hold the micro and macroscopic evidence of human behavior in the past. By ignoring them, we ignore important pieces of the puzzle that can help us ask and answer new questions. In this presentation we use two archaeological examples from the Caribbean Island of Puerto Rico, to evaluate what is known and how much more can be gathered from the incorporation of geoarchaeological techniques as part of the regular archaeological methodology. Our study reveals that the processes of human behavior and patterns of land use are severely simplified when only the macroscopic assemblage is considered. The study of sediments expands and enhances the complexity of the site formation processes and behavioral patterns. This allows the evaluation of new questions and innovative implications regarding, for example, patterns of production, consumption and discard of subsistence resources, or differentiated intra-site use of land-surfaces.

Sandoval, Cindy (CENTRO INAH-DURANGO), Enrique Chacon (CENTRO INAH-CHIHUAHUA), Elsa Olimpia Palacios (CENTRO INAH-DURANGO), Erika Rosales (UAZ) and Magdalena Garcia (UAZ)

[168] *Archaeological Project pipeline Chihuahua -Durango " (preliminary results)*

This paper is a preliminary result of the archaeological survey and recording surface of the "Project Pipeline Chihuahua and Durango." The relevance and importance of the identified sites lies in being unique in the area, located in places of possible transit that allowed to humans groups moved from one camp to another camp and one workstation to another, according to the plain and sometimes even stay overnight at the site. The transit zone of small bands of hunter-gatherers has been recognized by the dispersion of scarce materials over large areas. There are several hypotheses to explain how human groups (hunter-gatherers) inhabited these places overcoming constraints; this was based on the high degree of economic strategy and selection of food, like plants, space and natural resources. As far the material evidence of the sites, ceramics, polished and carved lithics. So far the archaeological research of Durango and Chihuahua has allowed a glimpse of the importance and complexity of the groups who occupied a long period of time, in which important moments of the history were developed.

Sandweiss, Daniel (University of Maine)

[28] *The Reitz Stuff: A Faunal Perspective on El Niño from Coastal Peru*

For the last 30 years, zooarchaeological data from coastal Peru have provided groundbreaking insight into the Holocene history of El Niño, the interannual climatic phenomenon that affects global climate and human societies. Elizabeth J. Reitz has authored important studies with both of us on El Niño and faunal biogeography, and she served as a mentor to one of us in developing biochemical proxies for El Niño. In this paper, we review the history of faunal studies of El Niño and analyze current understanding of El Niño's past behavior in light of the latest data.

[1] *Moderator*

[1] *Discussant*

Sandweiss, Dan [90] see St. Amand, Ani

Sanford, Victoria [24] see Walsh-Haney, Heather

Sanger, Matthew (Binghamton University)

[132] *Points of Revelation and Communication: Interpreting Native American "Monument" Construction in the Coastal American Southeast*

Native American conceptions of place have only recently been drawn into archaeological interpretations of landscapes and have yet to make a meaningful impact on the study of built environments, particularly the creation of "monuments." Drawing on American Indian philosophers and writers, this paper aims to remedy this shortcoming by (re)examining the creation of some of the oldest human constructions in the American Southeast—Late Archaic shell rings formed by hunter-gatherers more than 3,000 years ago. Dozens of shell rings have been found across the Southeast and were formed shortly after the stabilization of sea levels and the creation of the modern coastline. Based on foundational Native American ideas of relational existence, expansive conceptions of personhood, and localized generation of identity and meaning, I suggest that these shell constructions are best understood as points of communication between human and non-human worlds and that their presence along the coastline was an attempt to bring newly emergent landforms and ecozones into the social purview of ring builders.

Sankaranarayanan, Krithivasan [223] see Warinner, Christina

Sankey, Joel [254] see Fairley, Helen

Santana Sagredo, Francisca (Research Laboratory for Archaeology and the History of Art, University of Oxford), Rick Schulting (Research Laboratory for Archaeology and the History of Art), Julia Lee-Thorp (Research Laboratory for Archaeology and the History of Art), Carolina Agüero (Instituto de Investigaciones Arqueológicas y Museo) and Mauricio Uribe (Departamento de Antropología, Universidad de Chile)

[76] *Paired Radiocarbon Dating on Bioanthropological and Textile Samples from the Pica 8 Cemetery (Atacama Desert, northern Chile)*

Pica 8 is an inland cemetery of the Late Intermediate Period (A.D. 900–1450) in northern Chile. Previous stable isotope studies indicate highly variable dietary contributions of marine and terrestrial foods. However, it is unclear whether this variability is related to change over time or to the presence of groups with different origins. In order to evaluate whether these differences are diachronic or synchronic, radiocarbon dates were carried out on 23 samples. Given the high marine consumption by some individuals ($\delta^{15}\text{N}$ up to 24‰), the dates will be subject to marine reservoir effects. The MRE's impact along the Pacific coast of northern Chile is significant, but also spatiotemporally variable. Here, we report 9 paired radiocarbon dates on human bone and camelid textiles from the same graves. Five additional human samples were dated to represent the full range of dietary variability based on the stable isotope values. Obtaining these new 23 dates not only helps to better understand the high variability observed in the dietary patterns of Pica 8, but it also contributes to generate a MRE correction for the LIP of northern Chile.

Santana-Sagredo, Francisca [76] see Retamal, Rodrigo

Santarelli, Brunella (Metropolitan Museum of Art), Sheila Goff (History Colorado), David Killick (University of Arizona), Kari Schleher (Crow Canyon Archaeological Center) and David Gonzales (Fort Lewis College)

[289] *Lead Isotopic Studies of Pueblo I Glazes and Archaeological Mineral Specimens*

The earliest glazes in the southwest were produced during the Pueblo I period (ca. 700–850 C.E.) in the Upper San Juan region of Colorado. Lead isotope ratios of these glaze paints were collected using multi-collector ICP-MS in an attempt to identify the source of the lead used by the potters in the production of the glaze paints. This paper will present the results of this study, and compare it to published ratios of lead ores, as well as archaeological and geological galena samples from sites in southwestern Colorado and northwestern New Mexico, including galena samples recovered from Chaco Canyon. The lead isotope ratio suggests that the majority of the Pueblo I glazes were produced using the same lead ore which has been recovered from archaeological contexts in sites in the area, and as far away as Chaco, in New Mexico. Comparison of the archaeological ratios to geological ratios of galenas from mines in the San Juan and Rico districts of southwestern Colorado has not yet yielded a match and we continue to search for this source of lead.

Santiago, Percy [102] see Seki, Yuji

Santiago, Emilio and Reuven Sinensky (University of California Los Angeles)

[268] *Pithouses, Pueblos, Projectile Points, Petroglyphs, and Possible Plazas: An Update on the 2015 Petrified Forest National Park Boundary Expansion Survey*

Petrified Forest National Park is in the third and final year of its Boundary Expansion Survey, which has nearly doubled the park's size to 221,552 acres. Over the last three years, researchers have identified and recorded over 300 archaeological sites in a variety of ecological zones. Our survey focuses on a 640-acre parcel that encompasses flat grasslands, dune-covered Triassic ridges, washes, and mesa tops. Site types range from large Basketmaker II habitation sites, to Pueblo II and Pueblo III jacal structures, rock shelters, pithouses, and masonry pueblos ranging from over a single room to 20 rooms. Our research discusses the temporal and spatial distribution of sites recorded across a grassland capped cuesta in one area of the Boundary Expansion Survey. We highlight the variability present in a small portion of new park lands and compare the sites from the sandy grasslands atop the cuesta top, the gently sloping sandy grasslands that climb the cuesta, and the silty flats below the cuesta.

Santini, Lauren (Harvard University)

[19] *Insights on Arboreal Exploitation in Late Classic San Bartolo, Guatemala from Midden Charcoal Analysis*

This paper presents findings from analysis of the wood charcoal assemblage recovered from two chultun middens from a household site from the Late Classic period at the Maya site of San Bartolo, Guatemala. It will include discussion of fuel gathering strategies, subsistence strategies, how the species identified in the assemblage reflect the relationship the ancient residents of this household had with their local environment, and considerations for future research in reconstructing ancient forest management tactics.

[19] *Chair*

Santini, Lauren [19] see Weber, Sadie

Santoro, Calogero [62] see Osorio, Daniela

Santoro, Calogero (Universidad Tarapacá, Centro Investigaciones del H. Desierto, Arica, Chile)

[62] *Discussant*

Santos Correa, Daniel [167] see Silva, Rosicler

Saravia, Myriam [26] see Demarest, Arthur

Sarjeant, Carmen

[252] *In and Out of Contact: Comparing Communication between Sites with Ceramic Technology in Prehistoric Southern Vietnam*

Contact and communication between communities in the past can be identified through the comparison of material culture. Systematic studies of ceramic technological components including morphology, fabric and decoration have indicated that certain sites were exposed to networks of interaction more consistently than others. In a comparison between An Son and Rach Nui, both located in southern Vietnam with dates and evidence of occupation during the Neolithic period, from approximately 4000–3000 B.P. Cultural boundaries can be established through interaction between groups rather than social or geographic isolation. Detailed comparative analyses of ceramics from these two sites indicate that An Son exhibited a greater repertoire of possible imported ceramics compared to Rach Nui, to suggest the site was isolated in terms of ceramic technology. The two sites appear to have been integrated into two different interaction spheres within southern Vietnam, based on the ceramic evidence, and this has resulted in differences in the level of external contact within the region between the sites. These findings from the ceramic evidence are also substantiated from the lithic tool technology. The contrast in levels of communication between An Son and Rach Nui demonstrate networks of trade and exchange, cultural identity and social boundaries.

Sassaman, Kenneth (Univ of FL - Anthropology)

[17] *Discussant*

Sassaman, Kenneth [41] see Gilmore, Zackary

Sattenspiel, Lisa [168] see Warren, Amy

Saunders, Michael (Tulane University)

[273] *Long-Term Highland Maya Environmental Interaction: Integrating Archaeological, Ethnographic and Ecological Data*

My ethnographic research documenting the sacred geography of the northern rim of Lake Atitlán, Guatemala, has identified numerous contemporary sacred locations linked to ecologically critical areas. Some of these are archaeological monuments, while surface surveys of most others evidence pre-Hispanic materials. Additionally, previous survey (and limited excavation) documented a number of area archaeological sites dating to the Maya Preclassic, with some exhibiting habitation up to the present; many of these also appear to be correlated to environmental variables. Subsequent ethnographic investigation indicates current (and pervasive) environmental management, with practices of agriculture, agro-forestry, water and soil management, and even local micro-climatic manipulation being collectively utilized to manage local ecological processes; archaeological data reveals not only the temporal depth necessary for the development of such strategies but their implicit sustainability. Moreover, it appears such experientially-gained understanding is embedded in core cultural formulations regarding the antepasados (ancestors), with sacred sites serving as the metaphorical bridge between past and present populations. Thus, integrating data from archaeological, ecological, and ethnographic research can provide evidence of sustainable (over the long-term) ecological management and highlights the necessity of integrating archaeology into the study of environmental and socio-ecological resilience and long-term sustainability.

[273] *Chair*

Savage, Sheila [240] see Hammerstedt, Scott

Sayer, Duncan (University of Central Lancashire)

[25] *The Emotive Agency of Infants and Children in Early Anglo-Saxon Inhumation Cemeteries*

Infant and child graves have often received ambiguous interpretation when found in archaeological context. In 2012, a child's grave was excavated in the sixth century cemetery at Oakington Cambridgeshire. Sometime after deposition its feet were truncated by a large adult grave, however, the child's bones were repositioned on its legs, an action which impels continuing agency influencing the gravediggers long after the child had died and been buried. Child mortality was high in many past societies, but the loss of a child was not ambiguous and nor would it have been without difficulty for small communities. The construction of a grave, its relative position within the cemetery and its post depositional biography can be used to consider how infant and child burials were integrated into the fabric and routine of early Anglo-Saxon community and reinforced localized societal narratives. This paper will use case studies from the UK to explore how individual communities developed different depositional methods and will explore single and multiple infant burials designed to evoke a response in the funerary. It will also explore the internal construction of mortuary space to look at the grouping of infants and children as well as their relative dispersal.

Sayle, Kerry [103] see Hamilton, Derek

Sayre, Matthew [19] see Mayer, Aaron

Sayre, Matthew (University of South Dakota) and Nicco La Mattina (University of South Dakota)

[99] *Analogist Ontology at Chavín de Huántar*

The ontological turn in Anthropology has revealed new possibilities for considering the relationships between humans, material things, and "other-than-human persons," as well as reassessing the Western notion of a nature/culture dichotomy. One site where these insights have begun to be applied is Chavín de Huántar in Peru. The iconography of the site is well known for its mixed human/animal hybrids, a style that prompted John Rowe to consider the art figuratively as visual kennings, with certain elements serving as comparisons to other beings by means of substitution. While Mary Weismantel, amongst others, has challenged Rowe's figurative interpretation, her recent work also raises the possibility of gaining insight from Viveiros de Castro's perspectivist theory. Here we consider how an archaeologically grounded approach, acknowledging that the Chavín domestic economy was focused on farming rather than hunting, thusly problematizing the basic mode of relation axiomatic to perspectivism, can relate to the ontological turn. In particular, we analyze how these theoretical trends can develop the implications of economic modes of production based on hierarchical redistribution rather than on predation. Finally, we examine how the analogist ontology, proposed by Descola, allows for insights into the composite chimerical figures of the Chavín aesthetic.

Scaffidi, Beth

[215] *Narration, Mediation, and Transformation: Dismembered Heads from Middle Horizon Uraca (Majes Valley, Arequipa, Peru) and the Andean Feline-Hunter Mythology*

Excavations of two sectors of the cemetery site of Uraca in the Lower Majes Valley (coastal Arequipa, Peru) yielded human skeletons with evidence of post-mortem processing, including defleshing, removal of the soft tissues of the eye orbit, and drilling holes into the frontal and parietal bones. The 11 beheaded individuals were young adult or adult males. In addition, six defleshed (and unarticulated) mandibles belonged to likely males, whose crania were not recovered. Decoration styles, processing strategies, and social use (and re-use) differed between sectors. Associated with the Sector IIC human trophies, we found a skull and paws of an indigenous pampas cat. Similar to the human trophies, the cat's eyes had been cut out and stuffed with red cord. This paper examines these findings in light of Van Gennep's tripartite division of death rituals into rites of separation, margin, and aggregation, as well as in light of the Andean hunter-feline mythology. I engage with the idea that making, handling, and displaying these trophies served key functions in dealing with the crisis of death, serving to communicate conquest, mediate foreign spirits/ power, and harness or transform that volatile power into a generative force for the conquering community.

Scaramelli, Franz (Centro de Antropología, Instituto Venezolano de Investigaciones Científicas) and Kay Scaramelli (Universidad Central de Venezuela)

[175] *Rock Art in the Construction of Social Space in the Parguaza River, Venezuela*

The rock paintings of the Parguaza River form part of a tradition that extends back thousands of years. We can only speculate on why the paintings were made, who made them, or what their original meaning may have been. However, rock art provides an excellent index of the symbolic world of the peoples who settled the area, as manifested in different traditions. Local belief systems refer to ancestral territorial ties, and the mythical and ritual significance of mountains, caves, and rock art manifestations. These ethnographic sources can be used to advance ideas about the significance of rock art, as they illustrate the role of rock paintings in ritual activities used to mark the territory of an exclusive and potentially endogamous network of communities. In an attempt to understand the role of rock art in the production of social space, we will examine local toponyms, ceremonies, and myths, referring to different natural and cultural features of the territory including accounts of the elaboration of rock art. Panels painted in superimposed layers and styles may have served to establish cultural ties to the landscape; these were reinforced through re-utilization by successive populations prior to and beyond the time of European contact.

Scaramelli, Kay [175] see Scaramelli, Franz

Scarborough, Vernon [64] see Carr, Christopher

Scarborough, Vernon (University of Cincinnati)

[262] *Discussant*

Scarry, C. Margaret (Univ. of North Carolina-Chapel Hill) and Kathleen Deagan (Florida Museum of Natural History)

[28] *Shaping the South: Environmental Archaeology's Impact on Colonial Archaeology of the American South and the Caribbean*

This paper argues that the incorporation of environmental archaeological data into long-term research programs can significantly influence theoretical and methodological practice thereby enriching and sometimes reshaping interpretations. We draw on our respective experiences of producing, consuming and integrating environmental data to reflect on the benefits of such collaborative endeavors. To illustrate our points, we use examples from the American South and the Caribbean to explore the ways in which routine incorporation of environmental data has shaped the development of historical archaeology and contributed to understanding colonial histories in these regions.

Scattolin, Maria Cristina [57] see Lazzari, Marisa

Scerri, Eleanor (University of Oxford) and Richard Jennings (University of Oxford)

[22] *Developing Population Size Estimates for the Saharo-Arabian Late Pleistocene and Expectations of their Demographic Effects*

Similarities between stone tools in northeast Africa and Southwest Asia are considered to reflect either one or more of a number of processes including technological convergence in similar ecological zones, demic dispersal and cultural transfer/cultural diffusion. However, determining the likelihood of these effects is contingent upon accurate estimates of population size—a variable that is rarely discussed explicitly. In this paper, upper and lower bounds for population sizes in the northeast African Late Pleistocene are extracted from modelled net primary productivity in three time slices, at 130 thousand years ago (ka), 125ka and 115ka. These data are then used to simulate the likelihood of a number of demographic outcomes potentially affecting the similarities in the archaeological record between Late Pleistocene sites in northeast Africa and others in the Arabian Peninsula. Finally, the results are considered more broadly for understanding the out-of-Africa process.

Schaan, Denise P. [263] see Alves, Daiana

Schaan, Denise

[263] *Historical Ecology: Archaeology for a Sustainable Future*

Historical Ecology is a research program that seeks to integrate diverse perspectives from human and natural sciences to improve our understanding on the relations between societies and their changing landscapes. Investigations in historical ecology draw from different corpus of data, including the participation of the public, not only to solve scientific problems, but also to provide answers to social and political situations. Archaeology has a major role in the production of knowledge on the use of landscapes over vast periods of time, so it can contribute significantly to inform public policies to better plan the future. Drawing on Amazonian case studies, this paper shows the possibilities of such an approach, including the advantages of working in networks such as IHOPE-The Integrated History and Future of People on Earth.

[263] *Chair*

Schaan Pahl, Denise [263] see Iriarte, Jose

Schachner, Greg [178] see Lesure, Richard

Scharf, Elizabeth (University of North Dakota) and Melinda Leach (University of North Dakota)

[37] *Reflections on Teaching and Assessing Student Learning in Introductory Archaeology*

In this presentation, we present several of the means that we have used to collect data on student learning and the student experience in our introductory archaeology classes. Standardized institutional student evaluation forms, learning-response surveys, instructor-generated evaluation forms, hands-on lab activities, assignments, pre- and post-semester surveys (the "knowledge surveyor"), and evaluation of student products with rubrics will be described and discussed, along with their roles in formative and summative assessment. Course modifications and evaluation of department/program and university learning goals will be explored, along with a look at student perceptions of learning. Multiple uses for these data will be examined along with a look at change over time in direct and indirect assessment results.

Scharf, Elizabeth [37] see Leach, Melinda

Scheel-Ybert, Rita [49] see Mateus, Jorge

Scheiber, Laura (Indiana University) and Amanda Burt (Indiana University)

[123] *Investigating High-Altitude Campsites in the Rocky Mountains: A Decade Later*

Interpreting past hunter-gatherer use of mountains has been hampered through the years by difficult access, excessive ground vegetation, and wilderness restrictions. With the regular occurrence of forest fires that have exposed hundreds of sites during the last decade, our knowledge of campsite structure and landscape use has dramatically improved. We now know that remote campsites often contain tens of thousands of artifacts that represent a greater commitment to mountain resources and places than previously considered. What used to be rare is no longer unusual but is nonetheless still impressive. In this paper, we focus on a three-year project at the Caldwell Creek site (48FR7091) in the Absaroka Mountains of Wyoming. In addition to an overwhelming number of lithic flakes, a 2011 fire also revealed diagnostic Late Period artifacts, including projectile points, knives/bifaces, and the largest number of Intermountain Ware ceramics found in the state. We discuss these assemblages as well as new recording methodologies employed to document these types of sites.

[123] *Chair*

Scheinsohn, Vivian [94] see Rizzo, Florencia

Scheinsohn, Vivian (INAPL-CONICET/ University of Buenos Aires), Pablo Marcelo Fernández (INAPL-CONICET/ University of Buenos Aires), Mercedes Grisel Fernández, Florencia Garrone (Laboratorio de Genética Forense, Equipo Argentino) and Mercedes Salado (Equipo Argentino de Antropología Forense)

[176] *Taxonomical Identification by Cytochrome b: A Patagonian Case*

The application of traditional zooarchaeological methods in the analysis of faunal specimens recovered in Acevedo 1 site (Chubut, Argentina) led us to a low level of taxonomic identification. Therefore we decided to implement new ways to strengthen its information capacity. We joined hence the Laboratory of Forensic Genetics of the Argentine Forensic Anthropology Team (LGF-EAAF), which had developed locally a protocol for identify animal species in forensic contexts by Cytochrome b analysis. As a first step we tested the protocols by a blind test in order to identify bone subactual samples. The second step was calibrating its use in an archaeological context applying the protocol to Acevedo 1 site. Among the archaeological samples huemul (*Hippocamelus bisulcus*, South Andean Deer), was identified. This is the first archaeological identification of this endemic deer of the Andean Patagonian forest in Western Chubut and the first to be achieved by Cytochrome b. As a conclusion, the protocol was effective in solving the problem of determining forensic species. The results obtained allow the determination of archaeological samples depending on the genetic material degradation but the destructive nature of the analysis and its costs make that its application must be assessed properly.

Scherer, Andrew [59] see Golden, Charles

Schermer, Shirley [266] see Pope, Melody

Schiappacasse, Paola (Universidad de Puerto Rico)

[141] *Why are Archaeological Collections Relevant in the 21st Century? The Caribbean Experience*

The late 19th century and beginning of the 20th century provides us with numerous examples of the acquisition of collections carried out by museums. When archaeologists talk about those collections, housed at museums worldwide, the discussions are often directed towards how the lack of context limits or nullifies their research potential. I argue that we need to go back and carefully re-examine the research prospects of these collections. This presentation considers several avenues for research that can be developed in order to use the collections from a collections management perspective, and also to develop research projects using the artifacts as an important part.

From a collections management perspective we can trace the origin of the collection, looking at who was involved in the acquisition, registration and cataloging processes of these artifacts. Second, we need to fully understand the changes that have resulted from deaccessioning, exchanges and loans. Thirdly, I argue that the scientific potential has not been lost but instead we need to pose questions that re-examine what we really know about these artifacts. Drawing from current research in the Caribbean I will demonstrate that it is possible to develop insightful research projects that concentrate on museum collections.

[141] *Chair*

Schiappacasse, Paola [141] see Rodriguez, Yasha

Schiepati, Frank [131] see Hayward, Michele

Schilt, Flora [211] see Thompson, Jessica

Schleher, Kari [289] see Santarelli, Brunella

Schmader, Matthew (University of New Mexico)

[131] *Shape Shifters, Spirit Guides, and Portals to Other Worlds in Puebloan Rock Images of the Southwest*

Rock imagery in the puebloan region of the southwestern United States often combines elements from different animal, human, and plant sources. Blended elements may depict or refer to other-worldly states of being. Beings made from combined elements shift from shapes familiar in the present world and transport the frame of reference to the spirit world. Specific animal forms may be selected because they are spirit guides, have specific powers, or are guardians of cardinal directions from mythical times. Other worlds, especially the world below, may refer to mythical times before animals and people were fully formed, or may refer to the land of the dead or the underworld. Some animals, such as birds, are chosen as messengers of prayers or offerings while others are chosen because of their healing powers (such as bears). Many images refer to the transformation that occurs when dancers wear kachina masks and then assume the attributes of those kachinas. Examples will be presented from images dating to the late pre-European contact (A.D. 1300 to A.D. 1540) found in Petroglyph National Monument, New Mexico.

Schmidt, Christopher [52] see Osterholt, Amber

Schmidt, Paul**[230]** *Radiocarbon Dates from Baño Negro and Cerro Quiotepec, Chilapa, Guerrero*

Recent dates from two sites in the Chilapa area of the Montaña Baja of Guerrero state, Baño Negro and Cerro Quiotepec-Oxtotitlán, throw light on the Formative horizon temporality in the area, including the Oxtotitlán rock shelter. Baño Negro ceramics indicate continuous Early through Late Formative occupation, and the radiocarbon dates confirm Early Formative occupation, perhaps earlier than previously thought.

[230] *Chair*

Schmidt, Ryan [147] see Karsten, Jordan

Schmidt Shoenberg, Paul [230] see Schmitz, Kirk

Schmitt, Dave (RPA)**[69]** *From Dirt to Behavior: An Introduction*

This paper presents an introduction to the life and times of David B. Madsen and a collection of presentations that celebrate his significant contributions. Perhaps best known for his unparalleled investigations of Great Basin paleoecology and Fremont period farmers and foragers, Madsen's voluminous and enduring record also includes books and articles on late Pleistocene-Holocene paleontology, the peopling of North America, the Asian Upper Paleolithic and the transition to agriculture, the prehistory of western China, and the initial peopling of the Tibetan Plateau and the development of high altitude adaptations. His diverse, interdisciplinary approaches to the archaeological record are truly "from dirt to behavior" as they characteristically incorporate geomorphology, paleoecology, climate change, ethnography, and human behavioral ecology. His collected works have greatly enhanced ecological and archaeological studies around the world and his methods, theoretical approaches, and results of investigations will continue to influence earth and social science research for generations to come.

[69] *Chair*

Schmitz, Kirk, Amanda R. Harvey (University of Nevada, Reno), Christopher Von-Nagy (University of Nevada, Reno; Florida State University), Eliseo Padilla Gutiérrez (Instituto de Investigaciones Antropológicas UNAM) and Paul Schmidt Shoenberg (Instituto de Investigaciones Antropológicas UNAM)

[230] *Contextualizing the Art: Excavations at Oxtotitlán Cave, Guerrero, Mexico*

This paper presents findings from the 2014–2015 field seasons of the Urban Origins Project at Oxtotitlán cave in Guerrero, Mexico. Collaborative archaeological methods at the Quiotepec-Oxtotitlán site resulted in extensive survey, preliminary mapping, and excavations at the cave and in the surrounding area. Excavation units were placed in association with the murals, at the mouth of the rockshelter in the northern part of the cave complex, and in the botanical garden within the protected component of the archaeological site. Units in the rockshelter revealed cultural material that differed from that of the botanical garden, suggesting specialized use of space. Both lithic and ceramic analyses indicate intense activity during the Middle and Late Formative Periods, and exhibit ties to local cultural complexes as well as long distance interaction and trade. In particular, stylistic elements of the art and aspects of the Oxtotitlán ceramic assemblage resemble contemporaneous material culture from the greater Isthmian area, notably Chalcatzingo in the Morelos highlands. Future plans guided by these excavations include the placement of new units in unstudied areas to further document ritual behavior at the cave, and the continued support of the Acatlán communities' preservation and education program at Oxtotitlán cave.

Schneider, Anna (University of Colorado, Boulder)**[64]** *American Southwest, Mexican Northwest: An Examination of Ground and Chipped Stone Artifacts from Garden Canyon Village*

Garden Canyon Village is a large multi-component formative period site located in southeastern Arizona on the Fort Huachuca military reservation. Located 10 miles north of the U.S.-Mexico Border and 65 miles southeast of the Tucson Basin, Garden Canyon Village was located on the frontier of Hohokam, Mogollon, Casas Grandes, and Trincheras culture areas. This poster presents the final results from an analysis of Garden Canyon Village's ground and chipped stone artifacts. In addition to providing insight into raw materials, lithic technology, subsistence strategies, and regional trade, this project addresses Garden Canyon Village's position in the larger Southwest. The diversity of artifact types and source analysis of non-local materials has revealed that Garden Canyon Village was a crossroads for the movement of goods and an important transition zone between the major culture areas of the Southwest.

Schneider, Adam (University of Colorado at Boulder)**[74]** *A Tale of Two Cities: The Role of Cultural Factors in Determining Resilience to Climate Change*

In recent decades, there has been an increasing interest at both the scholarly and public level in the relationship between social transformation and climate change in the past, and especially in the potential role of climate change as a cause of societal collapse. However, this focus has also raised some concerns that too much emphasis is being placed upon environmental factors in some archaeological collapse models, and consequently that important social factors are not being adequately taken into account.

In order to highlight how cultural factors affect the impacts of climate change upon past societies, in this paper I will consider how drought affected two cities: Nineveh (in northern Iraq) and Sijilmasa (in southeastern Morocco). I will argue that although both cities were situated in arid environments, their relative resilience to drought can be attributed primarily to a complex of unique historical factors. Consequently, this "tale of two cities" demonstrates the need to ensure that the role of cultural factors in determining the relative impact of climatic fluctuations upon past societies is not underemphasized in our explanations for collapse.

[74] Chair

Schober, Theresa [133] see Peres, Tanya

Schober, Theresa (University of Florida)

[221] *Historical Illustration as Narrative: A Critical Inquiry*

The integration of research-driven results with visual media is an integral component of effective museum exhibitions, general interest publications and public programs in archaeology. Annual archaeology month activities, for example, often result in the design of posters to attract audiences and illustrate attributes of indigenous cultures. To what degree does this popular form of visual communication reflect contemporary theoretical perspectives on gender and identity rather than reinforce traditional biases? This paper explores how this imagery is developed, by whom, and the resultant portrayals of masculinity and femininity through a systematic analysis of visual representations of the Calusa of southwest Florida, an archaeologically and historically known chiefdom. In contrast with textual analysis of gender roles in historical documents and archaeological discourse, contemporary Western values weigh heavily in artistic execution, mediated through interaction with publishers, educators, administrators, and other stakeholders. This subconscious and overtly positivist messaging impacts the general public's understanding of the complexities of gender roles in history where female depictions are both minimized and marginalized.

Schoenfelder, Meagan [265] see Field Murray, Wendi

Schoenholzer, David (Department of Economics, UC Berkeley), Ernesto Dal Bo (Haas School of Business and Travers Department of) and Kirsten Vacca (Anthropology Department, UC Berkeley)

[247] *Integrating Archaeological Evidence on the Origins and Transformation of Sociopolitical Complexity During the Holocene*

Investigating changes in sociopolitical complexity is an important theme in archaeological research. Building upon previous work, the research project presented in this paper investigates the changes in complexity worldwide, questioning where increasing complexity first occurred and whether identifiable stages exist. The assessment compares patterns of change by pulling from archaeological and economic theories and data. Global archaeological sites are recorded from authoritative sources and digitized in a dataset that records, through the use of covariates, time since initial settlement of regions and the subsequent changes in complexity. Covariates that have been identified for each site incorporate geographic, technological and ethnographic variables. Approaching the question of increasing complexity at the granularity of the archaeological 'site' as opposed to pre-established cultural complexes allows for a more explicit analysis that considers the impact of regional change on the daily lives of ancient peoples. The future goals of the project include the incorporation of site information from a wide range of regional experts in order to build a robust database that will allow for an increasingly sound analysis utilizing multiple lines of evidence. The resulting data will add to our archaeological and economic knowledge of temporal and spatial change in sociopolitical complexity.

Schoenike, Katelyn (College of Wooster), Olivia Navarro-Farr (Professor College of Wooster) and Fox Georgia (California State University, Chico)

[183] *Diverse Identities of Plantation Life: Midden excavation on Betty's Hope Plantation*

Betty's Hope Plantation, on the island of Antigua has been excavated by California State University, Chico, since 2007. The site incorporates a wide-range of diverse use-areas including the Great House, a rum distillery, and slave quarters. Excavations have revealed that every area of the plantation represents a unique community with distinct material culture. In the 2014 season, researchers discovered a midden that appears to have been utilized by two of these diverse plantation communities. The midden, located between the great house and the slave village, was most likely employed by members from both communities. It therefore represents a context that incorporates vastly different cultural expressions and practices on the plantation. Although the Codrington family kept extensive plantation records revealing their elite status and identity they simultaneously overlooked that of the slave population which are limited to the remains found in the midden. This evidence, largely in the forms of Afro-Antiguan wear indicates those enslaved peoples incorporated their own cultural customs from areas of West Africa. In this poster, I discuss the collective identities on the plantation that are represented through the material culture in this unique midden and how I teased out the cultural expressions of those most underrepresented peoples.

Schoeninger, Margaret J. [44] see Streuli, Samantha A.

Scholl, Michael (College of Staten Island, CUNY)

[60] *Historical Ecology and Planning for the Future: Mapping the Historical Trajectory of American Agriculture*

Carole L. Crumley has long advocated broadly inclusive studies that reach across disciplines to bring together social and environmental data from multiple geographic and temporal scales in order to draw lessons from the past. This work reports the use of those approaches to map the changes in colonial American agriculture and on-going research into 19th century westward expansion. What is becoming clear is that U.S. has a long-term trajectory which continues to move away from the sustaining strategies of yeoman (owner-occupiers) to short-term strategies of farmers using hired labor on rented land. Is that the direction that Americans wish to keep traveling?

Schollmeyer, Karen (Archaeology Southwest) and Matthew A. Peeples (Arizona State University)

[64] *Population Changes and Intraregional Variability in the Mimbres Region of Southwest New Mexico, A.D. 1000–1450*

Population estimates are the foundation for many current interpretations of social changes, human demands on resources, and land use patterns in the Mimbres region over time. Population estimates for the area currently rely on either local datasets for specific subregions, or regional data from the early 1980s. This poster presents updated population estimates for the Upper Gila, Mimbres Valley, and Eastern Mimbres areas between A.D. 1000 and 1450. A large regional database allows us to examine the changing demographic history of the region over time and highlights intraregional variability over this 450 year period. Although relative population changes over time at a regional scale follow the pattern outlined by earlier studies, there are substantial differences in the population histories of each of the three subregions, and in the absolute population values for the region as a whole.

Scholnick, Jonathan [272] see Munson, Jessica

Scholnick, Jonathan (UC Davis) and Ryan Nichols (California State University, Fullerton)**[272]** *Reading the Chisel's Chippings: Changing Religious Attitudes about Death and Eighteenth-Century New England Gravestones*

The eighteenth century was a dynamic period of religious change, particularly in New England, as the Calvinistic influence of the Puritan settlers waned and new denominations emerged. This was also a time of rapidly changing funerary ritual, when the inscriptions on grave markers shifted from emphases on marking the remains of the decedent to commemorating them, and gravestone motifs became more diverse. This study examines the ways that religious attitudes towards death change, using a database of texts and decorative attributes inscribed on eighteenth-century New England gravestones, and their linkage with prominent decorative motifs on grave markers. Some argue that changes in grave marker decorations, epitaphs, and inscriptions reflect ideological changes, while others argue these changes reflect long-term social changes. Specifically, this study examines spread of novel decorative and linguistic elements found on gravestones during this period. Not only do the textual shifts in gravestone inscription enable us to characterize the diffusion of religious ideas, the linkage between decorative imagery and religious ideas informs middle range theories about the archaeology of religion.

Schott, Amy (University of Arizona, Petrified Forest National Park)**[120]** *Archaeological Site Distribution in Relation to Soils and Geomorphic Characteristics in Dune Landscapes in Northeastern Arizona*

The Petrified Forest National Park in northeastern Arizona contains abundant archaeology sites located in dune settings. Archaeological research in the area has shown apparent correlation between archaeological site locations and dune geomorphology, suggesting that prehistoric inhabitants frequently targeted dunes for habitation sites. It has been proposed that this relationship may be due to extensive use of dune soils for agriculture. This paper investigates soils and geomorphology of dune environments in Petrified Forest to characterize the relationship between archaeological site location and landscape characteristics such as soil type, landform position, and microenvironmental properties within dunes. This research will contribute to a better understanding of how prehistoric inhabitants used the dune landscape, and specifically what landscape characteristics may have contributed to making dune soils available for farming. In addition, the spatial relationship between archaeological site location and geomorphic patterns is explored to better understand site formation processes, site distribution, and site visibility in eolian settings in Petrified Forest National Park.

Schott, Amy [268] see Reitze, William

Schroder, Whittaker [59] see Golden, Charles

Schroder, Whittaker (University of Pennsylvania)**[228]** *Hilltops and States in the Usumacinta River Basin*

The ordering of space has been a focus of state-building initiatives since the formation of the earliest centralized polities. Landscape archaeologists are especially well situated to contribute to discussions regarding how states succeed and fail to control diverse populations in topographically complex areas. During the Late Classic period, the Middle Usumacinta Basin supported numerous regional polities, including Piedras Negras and Yaxchilan, that vied for supremacy over terrain broken by hills, valleys, and rivers that at times aided and challenged their efforts. The role of peripheral populations in this political landscape raises questions as to the influence of more localized political dynamics to the macro-political struggles of the Maya area. A comparison of hilltop sites, geographically and topographically peripheral to the Piedras Negras polity, reveals that in some cases hilltops were crucial to state monitoring of the political landscape, while elsewhere, hilltop settlements may reflect the acts of refugees "voting with their feet" to evade being governed. Recent survey and preliminary excavations at the site of El Infiernito, in particular, have raised many of the theoretical issues archaeologists face working in hilltop environments. Through settlement patterns, GIS analysis, and further excavation, El Infiernito is expected to address such challenges.

[228] *Chair*

Schroeder, Hannes [160] see Ziesemer, Kirsten

Schroeder, Hannes (Faculty of Archaeology, Leiden University)**[160]** *Ancient Taino Genome Sheds New Light on the Peopling of the Caribbean*

The Tainos were the first people to encounter Columbus when he set foot in the New World. The Taino culture emerged in the Caribbean around 1200 CE but the ancestral origins of the Tainos remain a matter of debate. Some scholars believe that the ancestors of the Tainos originated in the Amazon Basin, while others contend that they may have spread from the Colombian Andes via a Circum-Caribbean route. Theoretically, the ancestors of the Tainos could have entered the Caribbean from any or all parts of the American mainland, including North, Central and South America. Ancient DNA holds the key to solving this problem, as we can directly test some of the hypotheses put forward by archeologists and linguists. However, until now ancient DNA studies in the Caribbean have been hampered by poor preservation. Here we report the genome sequence of a thousand-year-old (894–1017 cal AD, 95 percent prob.) Lucayan-Taino individual whose remains were recovered from the site of Preacher's Cave in the Bahamas. We sequenced the genome to an average depth of 10.8× and show that the ancestry of the Taino can be reliably traced to the fluvial settlements of the Upper Orinoco Valley in South America.

Schroedl, Gerald (University of Tennessee)

[126] *Changing Patterns of Status among White Soldiers and Africans at Brimstone Hill Fortress*

British occupation of Brimstone Hill Fortress on St. Kitts from 1690 to 1854 developed in response to local conditions relating to the economics and organization of enslaved labor and to the strategic needs of maintaining a military garrison. The use, size, placement, and chronology of structures, and their associated material culture show that African slaves differed depending on ownership and military status, whereas branch affiliation (Ordnance, Medical, Artillery, or Infantry) and to a lesser degree marital status among officers and enlisted men characterized white troops. The housing conditions and diet for small numbers of African workers was comparable to enlisted white soldiers and for black soldiers too as their numbers increased and they replaced white soldiers in the post emancipation era.

Schroll, Andrew [94] see Marks, Theodore

Schryver, James (University of Minnesota, Morris)**[161]** *Crusader Archaeology at the Crossroads of the 21st Century*

Crusader Archaeology at the beginning of the 21st century occupies a somewhat strange position. While certain aspects of the field are at the forefront of interdisciplinary approaches to archaeological evidence, others remain focused on basic issues of identification, categorization, and preservation. In part this is due to the nature of the field itself. In addition, some studies can only focus on preserving a particular monument from further decay before moving on to the next one. The port city of Famagusta is a case in point. Meanwhile, in other cases, international and interdisciplinary teams have been able to complete thorough studies of monuments that can serve as models for future projects. The same trends apply to our knowledge of other aspects of Crusader archaeology ranging in scale from pottery to site types. In terms of theory, the issue of identity and cultural contact remain a strong focus in many countries, and we continue to grow in our understanding of this complex field. All the while, the current political situation in many of the relevant countries continues to present both challenges, but also reminders of the ways in which medieval archaeology can have a special relevance for our world today.

Schubert, Ashley (University of Michigan)**[225]** *Continuity and Change in the Pisgah Built Environment*

Previous studies of Mississippian towns and villages have extensively detailed the various elements of community organization and built environment that reflect the incorporation of widely shared Mississippian ideas and beliefs. How these towns were built and rebuilt over time demonstrates how regional processes of expansion and integration played out at the presumed edge of the Mississippian world. This paper examines the evolving built environment during the Pisgah period in western North Carolina and how the various architectural and spatial elements were used to organize community space. Recent radiocarbon dating at the Cane River site (31Yc91), Garden Creek site (31Hw1), and Warren Wilson site (31Bn29) provides new insights into how extra-local interaction with Mississippian groups influenced Pisgah traditions throughout the Appalachian Summit.

Schulenburg, Marcus (University of Wisconsin-Milwaukee) and Robert Cook (The Ohio State University)**[225]** *Filling the Built Environment: Using Ceramic Characteristics to Examine Fort Ancient Village Life*

In the Middle Ohio Valley, the Early Fort Ancient period (A.D. 1000–1200) saw significant changes to social organization reflected in the built environment. Among the most archaeologically visible of these developments was a new style of settlement—the formal village—typically consisting of spatially differentiated zones arranged in concentric circles. This study selects two Early Fort Ancient village sites from the Cincinnati area, Guard (12D29) and Turpin (33HA19); each site displays patterns of spatially differentiated architecture and activity. To further understand the nature of this segregation of space and activity, we focus on the use of ceramics with particular attention on their technical and stylistic attributes as mechanisms through which participants shared information. We use X-Ray Fluorescence (XRF) in conjunction with physical attributes to examine vessel function, the construction techniques of Fort Ancient potters, and the identification of non-local vessels. We use these data to create fuller pictures of the social organization and activities within each site, but also to expand our understanding of the different patterns that occur within the region during this period of social change.

Schulting, Rick**[52]** *New research on the Mesolithic 'skull nests' of Ofnet cave, SW Germany*

Since their discovery in the early twentieth century, there has been controversy over the chronology of the two 'skull nests' found within Ofnet cave in southwest Germany. Initially the focus was on whether they dated to the Palaeolithic, Mesolithic or Neolithic. The first radiocarbon dates at least resolved this issue in favour of the Mesolithic, but the considerable range obtained fueled a second debate: were the skulls deposited in a single event, which, together with the peri-mortem injuries present on many of the skulls, would suggest a massacre; or, alternatively, was this part of a regional mortuary rite given to certain members of the community, resulting in repeated deposition over some centuries? Here, we report the preliminary results of a new project aimed at resolving the chronology of Ofnet through a series of new 14C dates, and, in doing so, to address the nature of the head-related rituals that are clearly implicated whichever scenario is accepted, though with rather different consequences both for the people involved, and for our understanding of Central European Mesolithic hunter-gatherers.

[52] *Chair*

Schulting, Rick [76] see Santana Sagredo, Francisca

Schurr, Mark [111] see Dawson, Emily

Schurr, Mark (University of Notre Dame), Erica Ausel (Indiana University - Bloomington) and Della Cook (Indiana University - Bloomington)**[116]** *Burial Diversity at the Angel Site: How Many People and How Many Ways?*

The Angel site is a Middle Mississippian civic-ceremonial center that sat on the northeastern periphery of the Mississippian world. Excavations at the site, especially during the WPA era and a series of archaeological field schools just after World War II, created a collection representing several hundred human burials. Previous studies of this collection have emphasized relatively intact burials, either primary fleshed inhumations or easily identified secondary burials of single individuals. Although the modal burial at Angel was a fleshed inhumation of a single individual in an extended supine position, a great variety of burial methods were used including multiple secondary burials and individuals who underwent some degree of cremation. Understanding the

significance and meaning of these diverse treatments is complicated by site taphonomy; many burials were disturbed prehistorically, causing fragmentation and comingling, or were excavated without a full appreciation of the need to distinguish between various possible activities or practices that produced comingling or burnt human remains. This paper provides possible interpretations in a regional context for non-modal burial practices including partial cremations and their spatial and temporal relationships to burned and unburned structures, secondary burials, and the recent identification of previously unrecognized multiple-individual secondary burials.

Schwab, Christian [95] see Weinelt, Mara

Schwadron, Margo [28] see Quitmyer, Irvy

Schwadron, Margo (NPS-Southeast Archeological Center)

[132] *Monuments From The Sea: The Prehistoric Shellscape of the Ten Thousand Islands, FL*

The Ten Thousand Islands, Everglades, Florida contain an impressive maritime landscape, composed of entire islands constructed and terraformed with shell midden. These shell work sites are the tangible and complex vestiges of hunter-fisher-gatherer communities. Shell work formations include extensive complexes of mounds and features. Similarities in temporal and spatial patterning among shell islands suggest that communities were interrelated across a broad region. Shell work islands and their various features were formed and constructed to create new land, functional activity spaces, habitable places and dwellings, and to support fish/shellfish production and other subsistence activities. Other terraforming of shell work islands created architecture, sacred places, ceremonial landscapes, and monuments to memorialize significant people, places and memories tied to the landscape. Though shell work sites are complex sites analogous to palimpsests, they are more than just shell midden accumulations, amalgamations of shell mounds, or assemblages of features; they are distinct and socially constructed prehistoric landscapes. In order to understand these complex histories, they need to be examined on several complementary temporal and spatial scales, and I incorporate a multi-scalar landscape approach, including examining sites as individually constructed features, as human centered social landscapes, and within a larger, regional settlement pattern context.

[132] *Chair*

Schwartz, Glenn (Johns Hopkins University)

[12] *Kurd Qaburstan, A "Second Generation" Urban Site on the Erbil Plain*

While the emergence and early trajectory of urbanism has been extensively studied in southern Mesopotamia and in Syria, similar research has been conspicuously rare in northern Iraq. Fieldwork at Kurd Qaburstan (ancient Qabra?) on the Erbil plain conducted by the Johns Hopkins University now affords an opportunity to investigate a major Bronze Age urban center of northern Iraq. Since its main period of occupation is the Middle Bronze Age (Old Babylonian period, early second millennium B.C.), work at Kurd Qaburstan is designed to study the nature of an urban community in an era of "second generation" urbanism, following the first urban florescence in the Early Bronze Age (third millennium B.C.). Paradigms of Middle Bronze Age "hollow cities" replicating third millennium urban design but lacking dense populations are tested, as are hypotheses of heterarchy. The results of two field seasons (2013 and 2014) include excavated exposures documenting Middle and Late Bronze occupation and geophysical prospection exposing 30 hectares of the Middle Bronze city and revealing some of its organizational characteristics.

[12] *Chair*

Schwartz, Austin [267] see Arakawa, Fumiyasu

Schwartz, Christopher (Arizona State University), Ben Nelson (Arizona State University) and David Abbott (Arizona State University)

[289] *Differences in Mesoamerican Connections Across Hohokam Canal Systems of the Phoenix Basin, Arizona*

Material evidence of interaction between people of the U.S. Southwest and Mesoamerica is detected as early as ca. 2000 B.C.E. Markers of long-distance interaction increase in diversity and abundance over time, growing to include copper bells, iron pyrite mirrors, and other objects and symbols. These markers moved up to 2000 km by social actions and exchange mechanisms that remain obscure. Although the Hohokam had stronger ties to Mesoamerica than any region in the U.S. southwest, more could be done to examine local variation in that interaction. For example, to what extent were Hohokam canal systems differentially engaged in acquisition of nonlocal and "Mesoamerican-like objects?" Phoenix Basin Hohokam settlements can be grouped into canal systems, or irrigation cooperatives that researchers suggest functioned as discrete social units. In this study, we evaluate whether settlements in Phoenix Basin Canal Systems 1 and 2 were differentially engaged in distant interactions and how their involvement changed over time. Both systems developed over centuries, yet recent studies suggest that CS1 grew more slowly at first, later expanding relatively quickly. We suspect that distant objects and symbols played a greater role in the formalization of social relationships crucial to the more rapidly forming irrigation cooperative.

[289] *Chair*

Schwarz, Kevin (ASC Group, Inc.)

[291] *Costly Signaling, Cost Masking, and the Classic-Postclassic Transition: Slipped Ceramics and other Media in the Context of the Petén Lakes Region, Guatemala.*

Costly signaling theory indicates that highly visible acts of public generosity and display, which exact costs not easily recouped, however, can provide social benefits to those engaged in these acts. Such signaling is associated with the strength or fitness of the provider. Analyzing primarily slipped ceramics in display contexts but also making comparative references to obsidian use and architecture, this paper explores how Maya elites and rural sub-elites engaged in costly signaling and modified their actions by cost shifting and cost masking. The presentation focuses on the Lake Petén Itzá basin and its surroundings from the Late Classic to Postclassic transition. Costly signaling has been implicated by archaeologists in the rise of complex societies. However, costly signaling theory, with some modifications, might equally apply to theorizing political collapse and the regeneration of complex societies thereafter.

Schweikart, John [37] see Johnston, Cheryl

Schwendler, Rebecca (PaleoWest Archaeology)**[170]** *Beers with Lawrence and Insights into Magdalenian Visual Display at El Mirón Cave*

In 1996, Lawrence Guy Straus embarked on new adventures in fieldwork at El Mirón Cave in Cantabria, northern Spain. As a young University of New Mexico graduate student the author joined him there from 1997–2000. Excavating literally thousands of Magdalenian artifacts and features in the cave's corral area and visiting other Magdalenian caves on weekends made Lawrence's fact-filled and captivating classroom lectures come alive. The author's fascination with personal ornamentation and long-distance trade and exchange melded with Lawrence's suggestion of a grand synthesis of existing Magdalenian information. That combination set her on a long, challenging, but ultimately rewarding path of dissertation research that explored relationships among visual display, population density, and social mechanisms of colonization. As one of the very special, favored Magdalenian caves in Cantabria, El Mirón has continued to yield information that, when examined in the context of larger regional patterns, provides further insights into Magdalenian social behavior across space and time. El Mirón helped Lawrence's university career end with a flourish and will continue to provide fodder for years of professional contributions by Lawrence in retirement and by his students and colleagues.

Scott, Becki [79] see Vandam, Ralf

Scott, Ann (University of Texas at Austin/aci consulting)**[93]** *Cave 1 at the Site of at the Site of Chawak But'o'ob: An Interpretation of Subterranean Space in Northern Belize*

During the 2013 season, a team from California State University, Los Angeles worked with the Rio Bravo Archaeological Survey directed by Stanley Walling to conduct a preliminary assessment of Cave 1 (RB-47-142-X) at the site of Chawak But'o'ob. Located within the heart of the site's public architecture, Cave 1 is surrounded by a ballcourt, a sweatbath and a sinkhole. Though our survey and excavation revealed utilization of the cave that differed from other areas of the Maya lowlands, its location within the heart of the site's public architecture is significant in that caves are associated with people's first emergence onto the earth's surface and thus forms the basis of the group's claim to the land. There is a great deal of freedom in the placement of architectural elements but natural elements, which are immovable, probably determined the elaboration of this space.

[93] *Chair***Scott, Alyssa (University of California Berkeley)****[251]** *Memory and Life in Nineteenth-Century Sacramento*

In 1979, a trunk of artifacts was discovered concealed within a Sacramento house. The artifacts, photographs, and documents pertain primarily to the life of May Woolsey, who died in 1879 at age 12. This paper seeks to investigate the assemblage and explore how interpretations involving memory can contribute towards an understanding of identity, childhood, and biography. The association of the artifacts in the assemblage, the curation of the artifacts, and the context of the trunk all have implications regarding the lives of the people who were connected to it. By considering themes of memory, this paper will examine identity, personhood, family, and biography in nineteenth-century California. This paper also contemplates different scales and types of memory which are useful for archaeological interpretation.

[251] *Chair***Scott Cummings, Linda (PaleoResearch Institute, Inc.)****[125]** *Spatial Analysis of Domestic Structures*

Cooking, food processing, and consumption all contribute anthropic activity markers traceable using archaeobotanic analyses and chemical signatures. Grid square sampling illuminates patterns for comparison with distribution of artifacts and architectural elements, revealing patterned activities that identify food storage in vessels, grinding, and cooking. Multiple lines of evidence, each providing only a portion of the record, contribute to better understanding economic activity and provide opportunity to assess human interactions within that space. Representing results of spatial analysis using Surfer depicts people going about their daily lives.

Scott Cummings, Linda [177] see Banks, Kimball

Scott-Ireton, Della (Florida Public Archaeology Network), Jeffrey Moates (Florida Public Archaeology Network) and Nicole Grinnan (Florida Public Archaeology Network)**[260]** *The Best Days at FPAN are Under Water: The SSEAS and HADS Programs for Sport Divers and Diving Leadership*

FPAN's development of the Submerged Sites Education & Archaeological Stewardship (SSEAS) program targeted to sport divers and the Heritage Awareness Diving Seminar (HADS) targeted to diving leadership has led to gains in the appreciation and protection of the underwater cultural heritage, in Florida and elsewhere. In presenting these programs, FPAN staff have worked with divers ranging from newly certified to long-time educators, in the process learning as much as we teach. This paper describes these programs and how they are intended to encourage divers to become active in preserving underwater cultural heritage, monitoring historic wrecksites, and making their own discoveries, thereby producing information instead of simply consuming information.

Scudder, Kelley [142] see Pateman, Michael

Searcy, Michael [275] see King, Daniel

Searcy, Michael (Brigham Young University) and Todd Pitezal (University of Arizona, Arizona State Museum)**[289]** *Excavations at Vista del Valle, a Viejo Period Site of the Casas Grandes Cultural Tradition in Chihuahua, Mexico*

In the summer of 2015 we conducted excavations at a site located along the Palanganas River, just south of the Casas Grandes River Valley in northwestern Chihuahua, Mexico. This represents the first excavation of a Viejo Period site (A.D. 700–1200) in this vicinity since the 1960s. We discovered

remnants of at least five structures, and fully excavated three. This paper reports our findings and compares them to previous work carried out in the region.

Searle, Jeremy [223] see Boivin, Nicole

Sebastian Dring, Katherine [61] see Silliman, Stephen

Seebach, John (Colorado Mesa University)

[40] *Thirst for Knowledge: Teaching Typology and Social Organization through the Stylistic Attributes of Water Bottles*

Residents of Grand Junction, Colorado must necessarily adapt to the arid, high-elevation climate of the northern Colorado Plateau. One highly visible adaptation to aridity is the personal transport of potable liquids in an array of vessels. Such vessels are ubiquitous among Colorado Mesa University students, staff and faculty, and they provide a readily accessible source of data with which to illustrate the uses of typology, style and the material correlates of social organization. In a multi-week project, introductory archaeology students are challenged to discern patterns in water bottle use among their classmates and professors. They first create a water bottle typology, and later document style through the presence of appliqués and other decorative features. Finally, students collect basic demographic data on bottle owners. With these data in hand, students are then tasked with finding correlations between certain bottle types and particular groups of people, whether certain decorative aspects correspond to sex/gender, and whether “exotic” bottles are somehow special. From a pedagogical perspective, highlighting items students themselves use and decorate makes it easier to explain concepts that might seem esoteric when using more traditional archaeological examples.

Seeman, Mark [285] see Hill, Mark

Segard, Jill [50] see Ambrosino, Gordon

Seibert, Michael (NPS- Southeast Archeological Center)

[229] *Reinterpreting the Battle of Cowpens, 1781*

In August 2015, the Southeast Archeological Center undertook a large-scale systematic survey of the core battlefield and surrounding environs of Cowpens National Battlefield. The survey covered over 50 acres using Federal and State archaeologists in conjunction with volunteers from throughout the southeastern United States. The project nearly doubled the footprint of the battle, in addition to uncovering several artifacts that are key to interpreting troop movements and actions across the landscape. The resounding success was due in large part to this collaboration of State, Federal, and Private organizations that came together with the singular focus of better understanding the events of January 17, 1781. These partnerships are being further developed to carry the momentum of the project by developing outreach, research design, and providing support to Revolutionary War sites throughout the southeast as part of the buildup for the 250th anniversary of the American Revolution the goal of which is to shed light on the importance of the Southern Campaigns of the American Revolution as a deciding factor in American Independence.

Seidemann, Ryan [6] see Halling, Christine

Seidemann, Ryan (Louisiana Department of Justice) and Christine Halling (Louisiana Department of Justice)

[187] *Lessons Learned from the Courts: Forensic Archaeology and Anthropology in Recent United States Jurisprudence*

Unlike many other aspects of archaeology, forensic archaeology and anthropology is, in part, only as effective as the courts believe it to be. While peer review is the gold standard for assessing the integrity and viability of the scientific aspects of forensic archaeology and anthropology, passing muster in a court of law can be a different—and sometimes counterintuitive—standard. Although some recent research in this area has examined the impact of court attempts to “police” the integrity of science in forensic anthropology expert testimony, this presentation casts its net wider. We examine broadly the treatment and discussion of forensic archaeology and anthropology in the jurisprudence not to divine expert standards, but rather to assess overall reception of these areas of inquiry by the courts. Through this presentation, we review several years-worth of jurisprudential commentary on forensic archaeology and anthropology with an eye towards providing guidance for practitioners to assist them in navigating potential pitfalls of operating within the legal system in the United States.

Seidensticker, Susanna [206] see Jackson, Brittany

Seidita, Max (University of Central Florida) and Lucas Martindale Johnson (University of Florida)

[236] *Using pXRF to Test for the Market Exchange of Obsidian at Postclassic Santa Rita Corozal, Belize*

This poster discusses the levels of access to various obsidian sources and source regions as a prerequisite to testing a market exchange model for the distribution of obsidian during the Postclassic period (A.D 1150–1530) at Santa Rita Corozal, Belize. A sample of 247 obsidian artifacts dating to the Postclassic period were assayed using portable X-ray fluorescence spectrometry (pXRF) to determine the obsidian sources being exploited. Five sources were identified in the assemblage, including obsidian from Otumba, Mexico which had not previously been found in the Chetumal Bay region. The proportion of sources and source regions being exploited was compared across the social statuses of 15 structures using ANOVA tests. It was determined that no one status had exclusive access to a single source or source region. Additionally, no statistical difference was found in the proportion of obsidian sources or source regions being consumed across statuses. These patterns indicate that access to obsidian sources were not being restricted at Santa Rita Corozal during this the Postclassic period. The research presented here better characterizes the nature of the regional and local economy by strongly suggesting that obsidian was being distributed via market exchange.

Seifried, Rebecca (University of Illinois at Chicago)

[166] *The Post-Medieval Settlements and Road Network of the Mani Peninsula, Greece*

In the past 50 years, a great deal of archaeological research in Mani has focused on its Byzantine churches and the enigmatic abandoned settlements that surround them. Far less has been written about the centuries following the collapse of the Byzantine Empire (i.e., the post-Medieval Period), when the Ottoman Empire took control. This paper gives a brief overview of the most important sources of historical information about the post-Medieval settlements in Mani. A reassessment of a list dated to 1618 underscores its importance in identifying settlement names, not least because it is the only known register that follows a geographical path around the peninsula. This unique characteristic allows for the proposal of several modifications to the toponym identifications that have been put forth by scholars so far. The paper also discusses recent fieldwork undertaken to record the settlements and the road/path network in Mani. Together with the historical data, the archaeological information was used to build a GIS database and settlement catalog. The rich dataset produced by this research can be used to trace the evolution of settlement hierarchy, community organization, and network properties over the entire post-Medieval period.

Seinfeld, Daniel M. [7] see Harper, Charlie

Seinfeld, Daniel (Florida Bureau of Archaeological Research)**[290]** *Mortuary Ritual at the Fort Center Mound-Charnel Pond Complex (8GL12): New Insights from an Accidental (Re)Discovery*

William Sears's reconstruction of a Hopewellian charnel platform with wood carvings at Fort Center (8GL12) is one of the more vivid imaginings of prehistoric ritual in Florida archaeology. This model has been influential in our thinking about ritual in the Okeechobee area. It was long believed that Sears's excavations completely destroyed the pond-mound complex and that further data recovery would be impossible. Recently, wallowing wild hogs (Sus scrofa) uncovered wood artifacts in the Fort Center mound-charnel pond complex. Salvage excavations revealed that Sears left behind these ancient wood items during his work in the 1960s. These carvings, including wood posts, provided samples for radiometric dating. Calibrated AMS dates reveal that the wood and the human remains in the pond were deposited during A.D. 600–1000. In light of these new dates and other recent research at the site, a reanalysis of Sears' excavations shows a dynamic construction history at the mound-charnel pond complex. For over 1,500 years, the people of Fort Center reinvented mortuary ritual practices at this location. This model shows the importance of mounds and watery places in designating persistent sacred places on south Florida landscapes.

Seitz, Christian [188] see Pattee, Aaron

Seki, Yuji, Diana Alemán (Universidad Nacional Mayor de San Marcos), Percy Santiago (Universidad Nacional Mayor de San Marcos), Nagisa Nakagawa (University of the Advanced Studies) and Megumi Arata (National Museum of Ethnology)**[102]** *Sealing Ritual Spaces of a Formative Site by the Early Cajamarca Culture*

Pacopampa is one of the largest ceremonial centers in the Formative Period located at the north highlands of Peru. Almost all the ritual space was destroyed after the Formative Period, however, the square sunken court was reused by the people belonging to the Early Cajamarca Period. Some platforms and rooms were constructed at the center of the court and a series of ritual activities associated with a lot of miniature pottery could be observed. After that unusual activities the court was orderly sealed by thick fill. In this presentation we will show the summary of the ritual activities held there and the process of sealing of the court.

Selch, Donna [7] see Rochelo, Mark

Selch, Donna (Florida Atlantic University), Mark Rochelo (Florida Atlantic University) and Chris Davenport (Palm Beach County Historic Preservation)**[246]** *Exploring the use of LiDAR Remote Sensing Data to Illuminate Belle Glade Earthworks*

Locating and mapping methodology of archaeological earthworks for the prehistoric Native American Belle Glade culture can be improved by applying airborne LiDAR (Light Detection and Ranging) employing FUSION software and the Ground Filter program to these remote areas. This study compares the standard utilization of vendor created classes for ground classification to FUSION's software ground filter program. The two case study locations contain Belle Glade type B circular-linear earthwork formations that were utilized for quantifying the results of each LiDAR processing methodology and visualization method through comparison of identifiable formations. Florida's northern Everglade's landscape and South Florida's tropical climate make traditional methods for archaeological earthwork identification difficult. However, FUSION's ground filter program provides more data and discernible features that are not possible from the standard method in both study sites in addition to providing reference points for georectification of the original scaled maps.

Seligson, Ken (University of Wisconsin-Madison)**[127]** *Lord of the Ring Structures: Burnt Lime Production and the Ancient Puuc Economy*

Burnt lime was one of the most significant and ubiquitous materials utilized in the daily lives of the ancient Maya. Lime was a key ingredient in the mortar that they used to construct monumental edifices and residential structures, as well as the lime plaster that they used to coat the facades, floors and interior walls of these structures. Lime was also crucial for maintaining a viable maize-based diet through the nixtamalization process. The recent identification of a series of ring structures hypothesized to be pit-kilns for producing burnt lime in and around the ancient Puuc site of Kiuc in the north-central Yucatán Peninsula provides a great opportunity to investigate the organization of the ancient lime production industry. Spatial analyses of the locations of the ring kilns in relation to other archaeological features such as residential and public architectural compounds, as well as other limestone industry features and topographical variables provide information regarding the important role that burnt lime production played in the ancient economy of the region.

[127] *Chair***Sellen, Adam (Universidad Nacional Autónoma de México)****[58]** *Latin America's New White Elephant: Museums and Exhibits of Pre-Hispanic Material Culture in the Post-Industrial City*

The "Bilbao effect," or "Guggenheim effect" as it is also known, posits that spectacular architecture designed by star architects can help renew a city's cultural sector and turn around a languishing economy. Many world museums in post-industrial cities have tried, with varying degrees of success, to reproduce the model implemented in Bilbao. In this talk we will explore how a focus on "wow-factor" architecture has transformed museums in Latin

America, and in particular how this approach has impacted their exhibiting practices and the visitor's overall experience of pre-Hispanic material culture.

Sellet, Frederic [123] see Arnhold, Nicholas

Selover, Stephanie (University of Washington)

[74] *The Rise of Fortification Systems in Anatolia at the Collapse of the Early Bronze Age*

The end of the Early Bronze Age (ca. 2000 B.C.E.) saw the collapse or the decline of a number of civilizations and settlements throughout the ancient Near East, and is an oft discussed topic in the study of the archaeology and history of the region. This paper takes a micro look at this phenomenon within Central and Southeastern Anatolia, using the creation, upkeep and collapse of complex fortification systems as a proxy for violence and the preparedness for violence in the region. Before the Early Bronze Age, few settlements were fortified in Anatolia, a marked difference between Anatolia and other ancient Near Eastern regions, including Mesopotamia and Northern Syria. By the end of the Early Bronze Age, virtually all archaeologically known urban centers were fortified, with a variety of different fortification technologies evident. The rise of fortification systems in Anatolia coincided with the rise of socially complex societies and the threat of outside violence, and began a new urban layout that would continue through the rest of the Bronze Age.

Seltzer, Heather (University of Colorado Boulder)

[65] *An Iconic Rebellion: Exploring Spanish Impact on Pueblo Iconography*

The mission period of the American southwest during the late 1500s and early 1600s, is defined by the adoption of Spanish Catholicism by the Pueblo people. Missionaries gradually introduced the Pueblo people to Catholicism in order to obliterate and replace the Pueblo peoples' traditional religion. The result of the Pueblo people resisting the Spanish, created a form of religious syncretism in which Pueblo people were forced to blend Christianity with their traditional religion in order to conserve their religious beliefs. The research goal of this study is to explore changes in iconography from pre-contact to post-contact by examining an assemblage of pottery from that time period in the Rio Grande area. It will look at the iconography of the Pueblo people during the time of Spanish contact to see how religious expression was changed by exploring revitalization efforts by the Pueblo people. The results of this study are presented here with retrospect on what religious motifs are represented and not represented in the pre-contact and post-contact pottery assemblage as compared to other forms of iconography, such as rock art and textiles, to understand the Pueblo people's religion and the change in religious expression due to the impact of Christianity.

Semaw, Sileshi [22] see Rogers, Michael

Semon, Anna (University of North Carolina)

[225] *Investigating Late Mississippian Incised Pottery on St. Catherines Island, GA*

Recent excavations at Fallen Tree (9Li8), St. Catherines Island, GA have recovered thousands of ceramics. Although the majority of the decorated sherds are complicated stamped, more than 500 sherds are incised, which is more than any St. Catherines Island Mississippian site. In this paper, I characterize Late Mississippian mortuary and village incised pottery on St. Catherines based on temper, rim attributes, designs, and incising techniques. In addition, I examine vessel forms and sizes to discuss differences between assemblages. Finally, I explore the various incised pottery designs and compare with similar designs on other Late Mississippian artifacts.

Senatore, Maria (CONICET-UBA-UNPA)

[39] *Material texts in Historical Archaeology. Exploring material dimensions of 19th century whaling logbooks*

Global growth of whaling activity in the nineteenth century brought the incorporation of remote and unknown areas such as Antarctica to the modern capitalist world. Logbooks were the official records of the activities of whaling voyages. Even before maps, written words in logbooks comprised the first records written in-situ about the experience of these newly incorporated spaces. These logbooks were often produced as a process, day by day, while the action was taking place. Due to the rich and detailed information in these records, logbooks have been traditionally studied with a main focus on their content. The goal of this work is to read beyond the words by exploring some of the material aspects of manuscript logbooks that we consider particularly meaningful. Logbooks were part of the material world of whaling expeditions, and we study these books/objects in their material dimension. Both the content as well as the physical form containing and organizing the text gain analytical relevance. These analyses focus on a set of logbooks of whaling expeditions departing from New England. We believe that the material aspects of these manuscripts could be part of the discussions about the exploration of new or unknown spaces in the nineteenth century.

Sepúlveda, Marcela [62] see Osorio, Daniela

Sereno-Urbe, Juan

[235] *Amacuzac archaeological project.*

Arq'lgo. Pablo Sereno Uribe. INAH Guerrero.

The Chimalacatlán archaeological project has focused its research in the southern section of the state of Morelos. Initially, this archaeological site was excavated by the archaeologist Florencia Müller in 1943.

The first actions developed by the Chimalacatlán archaeological project centered on the conservation and restoration of the different buildings along the site, focusing on those buildings that were extremely damaged. Subsequently, several surveys were conducted with the objective to record all the important architectural elements. During these surveys, there were many more archaeological sites located around Chimalacatlán.

Therefore, we think that it is imperative to extend the present study region to include the states of Morelos and Guerrero and to continue with surveys and excavations of the different sites established along the river Amacuzac. This river is the actual frontier between the states of Morelos and Guerrero. Accomplishing this will enable a greater understanding of an important and wider archaeological region.

That is why, in the poster we are going to present, the current results of the excavations of two sites located at the south of Morelos, very close to the state limit with Guerrero.

Serra Puche, Mari Carmen (IIA-UNAM), Aurelio López Corral (Centro INAH Tlaxcala México) and Alonso Gabriel Vicencio Castellanos (UDLAP) [179]

Changes in Obsidian Supply During the Classic to Postclassic Transition in Prehispanic Puebla-Tlaxcala

The Puebla-Tlaxcala region witnessed several shifts in political and economic power during the Classic to Postclassic transition. This area played a pivotal role in the development of cultural complexity following the demographic rearrangements that followed the fall of Teotihuacan as a pan-regional state power. However, little research has been carried on understanding shifts in exchange networks, especially on the trade of obsidian materials. Using XRF-p analysis, this paper seeks to provide new data on the economy of obsidian trade from the sites Xochitecatl-Cacaxtla, Cholula, Metepec and Tepeticpac. Here, we analyze shifts in obsidian procurement exchange webs and the implication on key resource access and control among local state entities.

Serra Puche, Mari Carmen [179] see Lopez Corral, Aurelio

Serrand, Nathalie [220] see Bonnissent, Dominique

Serrand, Nathalie (INRAP Guadeloupe) and Dominique BONNISSENT

[222] *The Saint-Martin Island's (French Lesser Antilles) Amerindian Archaeomalacological Record : Insight into a Six Millennia History of Interacting Pre-Columbian Societies and Environments*

Substantial archaeomalacological assemblages have been studied from seven precolumbian sites on the French part of the island of Saint-Martin (Lesser Antilles). Most of these sites were excavated through salvage archaeology procedures on large surfaces, allowing relative comprehension of their structural and functional organization, as well as the recovery of solid molluscs samples. These seven ensembles line the complete known chronological sequence of the island's Amerindian occupation, from the fourth millennium B.C. to the fifteenth century A.D. They therefore yield elements for diachronic considerations on the Amerindian exploitation systems of a specific resource—in this case molluscs—and their evolution through time in relation with macro-parameters (i.e., cultural evolutions and changes, paleoenvironmental parameters).

Serrano, Carlo (Sacharxeos)

[282] *Diversidad y Complementariedad en los Desarrollos Sociales Precolombinos de las Cuencas Upano y Palora, Morona Santiago, Ecuador*

En Pablo Sexto, Amazonía Sur del Ecuador, se ha descubierto una variabilidad, en cuanto a modos de vida de sus pobladores, a través de los años (2.000 a.C.–1.700 d.C.). El estudio llevado a cabo en esta zona, fue financiado por SENESCYT e INPC, para la obtención de datos paleobotánicos. Dentro de este contexto, la posición teórica adoptada fue la Ecología Histórica, entendiendo a la cultura material: cerámica, lítica y suelos, como productos tecnológicos, culturales, económicos y políticos, que tienen estrecha vinculación con el medioambiente. Ha sido determinante, entonces, el análisis sobre la utilización de geoformas y del suelo en espacios “agrícolas,” y la construcción de plataformas artificiales. Mediante las excavaciones y fechados realizados, se determinó la existencia de grupos móviles a-cerámicos (2.000–1.600 a.C.), sociedades constructoras de montículos (1–200 d.C.) y cazadores-recolectores-horticultores (900–1.700 d.C.), en las cuencas de los ríos Upano, Tuna y Palora. Una de las inferencias propuestas en torno a estos grupos, tiene que ver con la diversidad y alternancia económica y política, que no necesariamente busca un desarrollo lineal, encaminado hacia sociedades complejas o cacicales, sino más bien, se demuestra, la complementariedad y heterogeneidad en los desarrollos culturales locales.

Sesma, Elena [10] see Battle-Baptiste, Whitney

Settle, Kathleen [111] see Greene, James

Sever, Thomas (U. of Alabama, Huntsville)

[53] *Prehistoric Rootpaths in Costa Rica: Transportation and Communication in a Tropical Forest*

The objective of this research is to understand human adaptation and survival in a tropical forest environment that was buried through time by six volcanic eruptions. Through the use of remote sensing and GIS technology an ancient footpath network has been discovered that connects villages, cemeteries, springs, and other cultural features upon a forested landscape. A combination of aerial and satellite data was used to locate archeological features invisible to the human eye. This information allowed us to document social integration and cultural development with quantitative information from a landscape perspective.

Seyler, Samantha (New College of Florida)

[92] *A Technical Attribute Analysis of Textile Band Production at Uraca, Peru*

As with other forms of technology, normative patterns in textile production can suggest information about the communities of weavers that produced them. Through an analysis of technical attributes, this poster establishes the normative patterns involved in the production of textile bands at the mortuary site of Uraca in the Majes Valley of Peru and suggests how these patterns relate Uraca to broader textile traditions within the region. More specifically, it examines how Uraca relates to the Sigwas textile tradition, associated with the south coastal valleys of the Department of Arequipa. This poster also examines textile bands recovered at Uraca that do not fit within these patterns of production and what they might indicate about the population interred there.

[92] *Chair*

Sgheiza, Valerie [286] see Cox, Maria

Shaffer, Gary (USDA/NRCS)

[188] *Transmission of Architectural Knowledge through Agricultural Practice*

This paper explores an example of cultural transmission from Neolithic to modern times in central and southern Italy: the passing on of architectural knowledge through agricultural practice. Excavation and analysis of wattle and daub buildings from the Stentinello period (sixth and fifth millennia B.C.) of Calabria and observation of their twentieth-century counterparts prompted study of the continuation of this architectural tradition. Several constructional components have multiple utility in rural life and may have become enmeshed in cycles of general farming practices. For example, willow shoots used to tie together wooden wall frames were used in later times to tie grape vines, fasten branches when grafting, and make baskets. The mud employed as daub also served historically as a plaster to cover tree grafts and beehives of woven withies. Furthermore, plants used as temper in architectural daub could be added to clay that covered tree grafts. The study presents new data from art history, classical and historical literature (both agricultural manuals and fiction), and ethnography to understand how new generations learned constructional skills through frequent farming activities and helped to keep a building method alive.

Shaffer Foster, Jennifer (Medaille College)

[152] *Folklore and Fairy Forts: Re-Use of Archaeological Landscapes in Ireland*

The re-use of sites and landscapes in both ancient and contemporary contexts is widely recognized in archaeology. In Ireland, many sites show evidence of use throughout prehistory and into the historical era, although the meaning of these places changed substantially over time and continues to evolve today. This paper will examine historical and contemporary folklore surrounding archaeological sites in Ireland, focusing largely on the nineteenth and twentieth century understanding of raths, Early Medieval domestic sites, as "fairy forts." Fairies, otherworldly creatures, could be benevolent and generous or cause destruction, illness, or even death. Wise farmers have long respected the fairies and have avoided disturbing their homes—the fairy trees, bushes, and "forts" that dot the island. Yet fairy legends are not just tales of magic and the supernatural; these legends, rooted in specific places in the landscape, helped people mediate local and regional power relationships and uphold social mores. Today these legends not only survive but are spread by tourism, and therefore raths and other archaeological sites are understood in different but overlapping local, regional, and international contexts.

Shakour, Katherine (University of South Florida)

[71] *Why We Need to Succeed: Assessing the Outcomes of Community Archaeology Practices in County Galway, Ireland*

Public involvement and collaboration with communities are major concerns for archaeologists around the world. Community outreach efforts are major components of research projects and require an immense amount of resources. Further, different stakeholders have varied responses to those efforts. This paper uses data from the Cultural Landscapes of the Irish Coast (CLIC) project's community outreach on Inishark and Inishbofin, County Galway, Ireland, islands five miles into the Atlantic Ocean. This paper explores the community outreach methods the CLIC project uses and demonstrates through examples with diverse stakeholders, while stressing the importance of regional variation with practices and anticipated outcomes. The paper explores strategies the CLIC project employs to determine when community engaged practices are successful and ways to measure effectiveness and value. This paper discusses the benefits to understanding public archaeology outcomes and how to express the positive outcomes to various groups including those that fund archaeological research.

Shanks, Jeffrey (National Park Service)

[164] *Midden, Mounds, and Mortuary Cults—Excavations at the Swift Creek and Weeden Island Byrd Hammock Site in Wakulla County, Florida*

Recent investigations of Swift Creek and Weeden Island mound-midden complexes at Byrd Hammock in Wakulla County, Florida, and on Tyndall Air Force Base in Bay County, Florida, and show that there were direct and/or indirect interactions among these Woodland sites. Geophysical surveys of village plazas, comparisons of ceramic stamped patterns, and other data show the presence of a intraregional social network with shared expressions of ideology and settlement patterning that underwent similar changes between the Middle and Late Woodland periods. One of the primary changes appears to be the introduction of new mortuary practices coincident with the appearance of Weeden Island ceramic styles across the northwest Florida Gulf Coast.

Shantry, Kate [272] see Rorabaugh, Adam

Sharma, Sukanya

[71] *The People, the Megaliths, and the Changing Times in Cherrapunjee*

The megaliths of Cherrapunjee, are part of a prehistoric cultural tradition which is intricately woven with the socio-cultural life of the Khasis and Jaintias. But material changes in the nature of society and the economy in the latter half of the twentieth century have resulted in new identity formations in Cherrapunjee and this has undermined some of the presumed certainties of cultural identity. This study documented local community attitudes regarding the megaliths and how the community accessed, interacted and used the sites today. A framework for managing archaeological heritage by integrating global and local conservation approaches in Cherrapunjee was developed.

Sharma Ogle, Mini (Portland General Electric)

[39] *Of Power Poles, Fishing Poles and Post Holes: Developing a CRM Plan for an Electric Utility*

Environmental regulations, spatial planning, and striving for consistency in managing cultural resources within the electric utility industry will be discussed using Portland General Electric's (PGE) projects. Poster will address issues from the perspective of project development and prioritizing resources ranging from salmon to archaeological sites. Specifically, the issue of managing cultural resources in situations where FERC compliance or Section 106 is not the driving force is explored. PGE is in the process of developing an internal cultural resources management plan that provides guidelines for such situations.

Sharp, Kayeleigh (Southern Illinois University Carbondale)

[45] *Unexpected Social Complexity in the mid-Zaña Valley, North Coast, Peru*

Based on recent fieldworks, this paper argues for a major rethinking of the Gallinazo-Mochica relationship. Investigations in the mid-Zaña Valley have revealed unexpected architectural and social complexity at the site of Songoy-Cojal. The predominantly residential Cojal shows an abundant co-presence of stylistically Gallinazo and Mochica remains. In addition to fineline decorated ceramics perhaps from farther south, there is a strong Gallinazo-like presence, which may be characteristic of in the Lambayeque region (i.e., La Leche, Lambayeque and Zaña valley region). This evidence, combined with the presence of highly differentiated architectural configurations suggests distinct social and/or functional interrelationships around the site. This important discovery suggests that the users and perhaps makers of Gallinazo- and Mochica-style artifacts were engaged in unexpectedly complex social

relationships that endured centuries longer than previously expected. This paper examines some of the possible implications of the intense co-presence of these two distinct stylistic traditions, indicating that our perception of the relationship between non-Mochica and Mochica peoples is in need of significant refinements.

Sharp, Kayeleigh [205] see Litschi, Melissa

Sharpe, Ashley (University of Florida)

[134] *Isotopic Evidence of Animal Management and Long-Distance Exchange at the Maya Site of Ceibal, Guatemala*

Animal management and resource exchange are essential to the development of state-level societies. Archaeological evidence for these activities has been particularly difficult to track in the Maya area, but recent advances in isotopic research may allow a novel opportunity to observe these practices. This study reviews new evidence for animal management and long-distance exchange at the lowland site of Ceibal, Guatemala, a large Maya community occupied throughout the Preclassic and Classic periods (c. 1000 B.C.–A.D. 900). Evidence for animal diet and husbandry practices is assessed using stable carbon and nitrogen isotopes, while the presence of non-local animals at the site is evaluated using strontium, oxygen, and lead isotopic data. Lead isotopic testing has not been used to assess human or animal movements in the Maya region previously, and so this is the first such study to incorporate its use in the Maya lowlands.

[134] *Chair*

Sharpe, Ryan [214] see Fayek, Mostafa

Sharratt, Nicola (Georgia State University)

[74] *Resilience, Incursion, Incorporation: A Multi-Scalar Approach to the Temporality of Collapse in the South-Central Andes*

Cross-cultural literature highlights the importance of differentiating between political, societal, and 'cultural' collapse. Focusing largely on the short-term aftermath of collapse, this scholarship demonstrates that even in the clearest examples of political fragmentation, considerable stability in other components of past societies is often archaeologically visible. Less attention has been paid to longer-term impacts and responses. Taking the disintegration of the Tiwanaku state in the south central Andes circa AD 1000 as an example, I consider the temporal scales involved in collapse. Focusing on a small village in the Moquegua Valley, Peru, on the periphery of the Tiwanaku polity, that was established as the state fragmented, I explore how this community and its neighbors were affected by and responded to socio-political upheaval over time. I suggest that as elsewhere, in the first few centuries after the overthrow of Tiwanaku political authority, many elements of social organization and cultural practice were maintained at the local level. Drawing on excavation data spanning approximately 500 years, I then turn to the longer term ramifications of Tiwanaku state collapse, and explore how the immediate choices made by the community made it vulnerable to outside incursion and ultimately contributed to 'cultural collapse.'

[219] *Chair*

Sharratt, Nicola [204] see Hundman, Brittany

Shaw, Anna (Eckerd College)

[142] *Settlement Survey of Newfield Plantation, Cat Island, Bahamas*

In the wake of the American Revolution, exiled British Loyalists transformed the landscapes of the Bahama Islands. They developed sprawling plantation complexes on outlying islands where only small or transient settlements had once existed. A recent survey of Newfield Plantation, which was established on Cat Island by a member of a North Carolina Loyalist family, sheds light on the changes that occurred. Field investigation has yielded new data on the spatial organization and architectural elaboration of the early nineteenth-century estate, including housing for enslaved laborers. The findings speak to relationships embedded in both human ecology and dialectics of power. In turn, these relationships incorporated nested sets of boundaries and peripheries. The material remains at Newfield focus attention on the roles of spatial contexts, as well as the meanings of creolization in rural Bahamian lifeways before and after emancipation.

Shaw, Ryan [261] see Rabinowitz, Adam

Shaw, Justine (College of the Redwoods)

[273] *The Resilience of the Maya in Northern Yucatan during the Terminal Classic*

Resilience theory has typically been applied to living people by sociologists or psychologists or to components of the natural world by ecologists. Whatever its application, its scale is that of a community or system, with the focus is often on why particular components are able to persist when the system is inevitably disturbed, transformed, or reorganized, while others fare less well. Such systems move between stability and transformation in an adaptive cycle, with both environmental changes and human responses occurring. The transformations that took place in the Maya Lowlands before, during, and after the Terminal Classic can be analyzed in light of resilience theory, as society moved through phases of growth, conservation, release, and reorganization. Data from the Cochuah region, in the context of trends throughout the Maya Lowlands, are used to follow dynamic settlement pattern changes as society moved through collapse, release, and reorganization phases.

Shearin, Emily

[237] *Pigments in Peril: Degradation of Precolumbian Mesoamerican Murals*

Precolumbian Mesoamerican murals are cultural representations of numerous civilizations, often mirroring the lifestyles, beliefs, rituals, and traditions of various peoples such as the Olmec, Maya, Toltec, and Aztecs. The pigments used to create these murals are highly susceptible to degradation. Degradation not only affects the appearance of the murals, but can result in the breakdown of the chemical structure of pigments causing flaking, powdering, and foundation issues. This project aims to help the preservation of these important cultural pieces, by studying the chemical processes that lie behind the degradation of frequently used pre-Columbian mural pigments. Understanding these chemical processes is a crucial step to identifying

deterioration areas, measuring damage, delaying and/or stopping damage all together. With the pigments of Mesoamerican murals already identified, the next step was to look at the common chemical processes causing deterioration including: camera light, excavation damage, heat, UV exposure, water, and human touch. By measuring the time it takes these processes to occur, a time table was created, based off numerous degradation factors on multiple pigments, which has never been previously researched. The degradation scale created will aid in future studies of preservation, conservation, and restoration of prehistoric Mesoamerican mural pigments.

Sheets, Payson (University of Colorado)

[59] *Production, Maintenance, and Exchange in a Young Maya Community: Ceren, El Salvador*

What is now El Salvador was devastated by the Ilopango eruption, probably in A.D. 536. A small group of Maya immigrants founded the Ceren village in the uncontested landscape some three decades later. Only about four generations lived in and constructed the functioning community before it was buried by the tephra from the Loma Caldera eruption in about A.D. 650. Production and maintenance activities of the recently discovered sacbe are presented, along with its various functions. Evidence indicates it was designed, built, and maintained by villagers with no influence/contact from outsiders. Production and maintenance of household and communal buildings were equally internal processes. Each household had a service relationship to the community, evidenced by special-purpose buildings, or by an agro-economic specialization in one case. Food production was achieved by sophisticated agroforestry. Seed crops were planted on small ridges to increase water infiltration and decrease erosion. One root crop (manioc) was planted in elevated beds on slopes for drainage, while another (malanga) favored wet areas. Crop rotation involved manioc and maize. Fruit trees provided shade and food. Each household overproduced commodities for exchange within the village, and for exchange in nearby markets. Markets provided specialty products unavailable to villagers directly.

[53] *Discussant*

Shelia, Teona [87] see Ferring, Reid

Shelton, China [19] see Allen, Susan

Shen, Chen (Royal Ontario Museum)

[10] *Application of Heritage Value in Museum Engagement*

Museums play a pivotal role in engaging in diversified communities and public at large, as cultural heritage value is applied to an understanding of the past that is relevant to everyday life today. Museums hold significant collections of natural and cultural worlds over the age that witnessed climatic changes, natural disasters, and humanly-powered manipulations. The survival objects displayed in the galleries and exhibition today are keys to engaging the public into the dialogues of cultural heritages preservations. Museum provide platforms for the public in today's growing multi-cultural municipals to make meaningful links to the past of their own through today's available technologies and social media, that would raise their awareness to heritage values and give their voice to policy-making of cultural heritage for their communities.

Shen, Chen [38] see Brown, Kelly

Sherman, Diana [265] see Montoya, Amy

Sherwood, Sarah (Sewanee: The University of the South), Gerald Smith (Sewanee: The University of the South), Stephen Carmody (Sewanee: The University of the South), Alex Friedl (Sewanee: The University of the South) and Patrick Vestal (Sewanee: The University of the South)

[6] *Multidisciplinary Research on "Rebels Rest": A 150-Year-Old Log Frame House Site in Sewanee, Tennessee*

This poster summarizes the preliminary results from a multidisciplinary research project that began as a salvage project when a 22 room, 150-year-old log frame house burnt on the campus at the University of the South in Sewanee, TN. Faculty, students and volunteers are actively involved in an integrated program that includes archival research, architectural history, dendrochronology, dendroecology, geoarchaeology, paleoethnobotany, zooarchaeology, and historical archaeology. The seven acre site included two homes, one constructed in 1860 and the final in 1866, and several outbuildings. The site offers significant challenges archaeologically as it represents a palimpsest of over 150 years of intensive use in an area composed of shallow and easily eroded soils. The occupants of these households represented a small group of affluent, white, Episcopal Euroamerican Plantation owners who had come to the remote Southern Cumberland Plateau to avoid the heat and fevers of the deep south and to build a University to rival any in the north. We present preliminary summaries of the data from these integrated research foci to begin to reveal everyday life within this small community in a local and market economy. Comparisons are drawn between local excavations of small subsistence farmsteads in this rural community.

Shi, Feng [10] see Wei, Qiaowei

Shimada, Izumi (Southern Illinois University)

[255] *Molding in Ceramic Production: Challenging Pervasive Views*

The use of one or more pairs of concave molds has been a major ceramic formation method throughout much of the world. This method has traditionally been seen as a rational solution to efficiently producing a large number of standardized products. This paper questions these views as being overly generalized or untenable in terms of data from excavated ceramic workshops and examination of products pertaining to Mochica and Sicán cultures on Peru's north coast and to the persistent figurine tradition of coastal Ecuador. For example, at the 1,000-year-old Middle Sicán workshop at Huaca Sialupe, vessels of same sizes and shapes were made using different sets of molds in contiguous rooms. This is antithetical to the commonly held view of molding associated with efficient production of standardized vessels. Figurines in these areas were predominantly produced using single press-molds. A key implication is that the molds were used to assure a faithful reproduction of important images or icons. Much the same can be said about the famed Mochica portrait vessels. Overall, our views of mold-based production need to balance producer and consumer's perspectives and take into account of the nature of products and use.

Shimek, Rachael [265] see Clauter, Jody

Shirar, Scott (University of Alaska Museum of the North), Joshua D. Reuther (University of Alaska Museum of the North), Joan B. Coltrain (University of Utah), Owen K. Mason (GeoArch Alaska) and Shelby L. Anderson (Portland State University)

[217] *Exploring the Differences in Radiocarbon Ages of Seals and Caribou: A Case Study from Kotzebue Sound*

J. Louis Giddings' pioneering work in chronology building in Northwest Alaska laid the groundwork for this case study, where we explore differences between the radiocarbon ages of seals and caribou from Late Holocene archaeological sites in the Kotzebue Sound region. Samples were recovered from distinct cultural features like house floors and cache pits which date between 130 and 1600 BP, including two samples from a house excavated by Giddings in Kotzebue in 1941. Our comparisons of radiocarbon dates on caribou and seal bones show average differences in ages between 750–890 years. Our comparisons of charcoal/wood and seal radiocarbon ages also indicate offsets of 750–915 years between these two materials. These offset results on prehistoric samples are also in accordance with radiocarbon ages measured on historic seals living and collected in the 1930s that are estimated to date between 830 and 860 B.P. Further, we examine differences among local reservoirs through time and to the global marine reservoir estimates. We also point out contributions of significant collaborators to the project: Adam Freeburg, National Park Service, and Pete Bowers, NLURA.

Shiratori, Yuko (The Graduate Center, CUNY)

[291] *Terminal Classic to Early Contact Period Obsidian in the Petén Lakes Region: Inter- and Intra-Site Variation of Raw Materials*

Recently, obsidian studies in the Maya area have benefited from the instrumental sourcing of large samples to reconstruct political and domestic economies. This paper summarizes results of the largest portable x-ray fluorescence (PXRF) source attribution study of obsidian in the Petén lakes region from the sites of Tayasal and Nixtun-Ch'ich'. Cluster analysis of the chemical profiles of 1,123 obsidian specimens suggests that two sites had varying strategies of procurement that emphasized participation with Ixtepeque, El Chayal, and San Martín Jilotepeque exchange networks. Inter- and intra-site diachronic analysis of obsidian procurement patterns represents changes through time from the Terminal Classic to the early Contact period (A.D. 900–1697). The large sample size of this study permits a more refined understanding of obsidian acquisition in from individual residences. Results are compared to previously published data from the surrounding sites of Nojpeten, Quexil, San Jerónimo II, Ixlú, and Zacpetén to further understand social changes in the subregion, and reveals the entangled economic relations among political groups.

[291] *Chair*

Shirazi, Sabrina (Smithsonian and University of Maryland), Courtney Hofman (University of Oklahoma), Torben Rick (Smithsonian National Museum of Natural History) and Jesus Maldonado (Smithsonian Center for Conservation and Evolution)

[110] *Using Environmental DNA to Examine Human-Animal Interactions on the California Channel Islands*

Conducting aDNA analyses can be limited by the preservation and availability of biological remains at archaeological sites. Soil can contain DNA (environmental DNA [eDNA]) from the animals and plants that were present in the landscape and provide a record of prehistoric plant and animal distributions. We designed and tested a protocol to capture DNA from several extinct and extant taxa from soil on the California Channel Islands as a potential tool for understanding the biogeography of island mammals and birds. This eDNA approach allows us to examine human-animal interactions that could otherwise not be identified.

Shirazi, Sabrina [160] see Hofman, Courtney

Shock, Myrtle (UFOPA)

[167] *News from Unknown Parts of the Amazon, Interfluvial Sites Come to Light*

The expansion of archaeological research in the Amazon Basin, from the margins of major tributaries to small rivers and headwaters is populating empty portions of our maps. In the region of Presidente Figueiredo, Amazonas State, Brazil, occupation of the interfluvial zone was neither ephemeral nor short lived with sites every 2 kilometers, on average. One extensively excavated site, Claudio Cutiã, was occupied for over 1,000 years beginning around 1600 B.P. The formation of anthropic dark earth at 1150 B.P. marked a significant change in human impact on the locale. Another modification occurred near the end of site occupation when six mounds were constructed in a circular arrangement as seen elsewhere in Amazonia. The sequence of changes in the site's occupation, utilization and formation are explored in relation to regional cultural patterns and potential human activities, notably fishing in the rapids that front the site and exploitation of forest plant species.

Short, Laura (Texas A&M)

[140] *Quantum Archaeology: Raman Spectroscopy of FCR in South-Central North America*

Macrobotanicals, usually in the form of identifiable charcoal, have formed the basis of our archaeological evidence of what was cooked in earth ovens, and microbotanicals such as phytoliths, pollen, and starch grains are expanding that knowledge. There are, however, still limitations: for example, inulin does not have a microbotanical proxy. Inulin is the primary carbohydrate for many important plant foods such as onion, camas, agave and sotol. Raman spectroscopy, a type of vibrational spectroscopy, is a potential tool to identify these kinds of food residues. Researchers use vibrational spectroscopy to characterize a substance by measuring the change in a light's wavelength as it passes through the substance. Raman spectroscopy has been used extensively in art and archaeology but not yet applied to fire cracked rock. This presentation reports on a Raman spectroscopy analysis of organic residues on fire cracked rock from earth ovens in south-central North America, attempting to develop a new technique for direct evidence of what was processed in earth ovens.

Shreve, Nathan (University of Mississippi), Eileen G. Ernenwein (East Tennessee State University), Jay D. Franklin (East Tennessee State University) and S.D. Dean (East Tennessee State University)

[137] *A Flow of People: Household and Community at the Cane Notch Site, a Protohistoric Cherokee Town on the Nolichucky, Upper East Tennessee*

Radiometric dates from the protohistoric Cane Notch Site on the Nolichucky River in upper east Tennessee indicate contemporaneous ceramic assemblages characterized by multiple traditions. Our work produced wares referable to the Qualla and Overhill series, wares directly associated with 18th century Cherokee villages elsewhere. Burke wares, from the eastern side of the Appalachians, also occur in large numbers. These "different" wares at Cane Notch share common attributes, however, that also reflect a local identity. Using geophysics, excavations of selected house floors, and ceramic attribute analyses (including p-xrf analysis), we explore ways of doing and identity at the Cane Notch Site.

Shreve, Nathan K. [292] see Bolte, Christina

Shuman, Bryan N. [55] see Robinson, Erick

Shuman, Bryan [218] see Kitchel, Nathaniel

Sieg, Lauren (National Museum of the American Indian)

[30] *Gazing at the Horizon: The NAGPRA Stories Yet to be Told*

What will NAGPRA look like in 25 or 50 years? The horizon is constantly shifting; it looks bright and dark, clear and complicated. Social research on the first generation of archaeologists to emerge after the passage of NAGPRA suggests that NAGPRA will remain relevant and important. At the same time, the increased diversity of this generation and an emerging post-racial world will challenge the concept of identity that lies at the heart of NAGPRA. Digital technologies will provide new methods for studying the archaeological record and making collections and archives readily accessible to people outside the academe. The proliferation of digital information, however, will open avenues for cultural appropriation that cannot be remedied through NAGPRA. Collaborations on research and cultural resource projects will continue to yield benefits in multiple ways, but the repatriation and reburial of human remains and other collections will necessarily limit some research. A few aspects of NAGPRA implementation are unlikely to change, including attempts to weaken cultural resource protection laws and the everyday business of implementing NAGPRA at the local level. The wildcard for any predictions is the courts, whose decisions may run counter to prevailing understandings of the law and change the course of implementation.

[30] *Chair*

Siegel, Peter E. [100] see Wells, E. Christian

Siegel, Peter, John Jones (Archaeological Consulting Services), Deborah Pearsall (University of Missouri, Columbia), Nicholas Dunning (University of Cincinnati) and Pat Farrell (University of Minnesota, Duluth)

[220] *Caribbean Landscapes in the Age of the Anthropocene: The First Colonizers*

Identifying first human colonization of new places is challenging, especially when groups were small and material traces of their occupations were ephemeral. Generating reliable reconstructions of human-colonization patterns from intact archaeological sites may be exceedingly difficult given post-depositional taphonomic processes and in cases of island and coastal locations the inundation of landscapes resulting from post-Pleistocene sea-level rise. Paleoenvironmental reconstruction is a better way to identify small-scale human-colonization events than by using archaeological data alone. This is demonstrated through a sediment-coring project across the Lesser Antilles. Paleoenvironmental data were collected informing on the timing of multiple island-colonization events and land-use histories spanning the full range of human occupations in the Caribbean, from the initial forays into the islands through the domination of the landscapes and indigenous people by Europeans. In some areas, our data complement archaeological, paleoecological, and historical findings from the Lesser Antilles and in others amplify understanding of colonization history. We highlight data relating to the timing and process of initial colonization in the eastern Caribbean. Paleoenvironmental data provide a basis for revisiting initial-colonization models of the Caribbean. Archaeological programs addressing human occupations dating to the early to mid-Holocene, especially in dynamic coastal settings, should systematically incorporate paleoenvironmental investigations.

Sierpe, Victor [207] see Morello Repetto, Flavia

Sievert, April [30] see Thomas, Jayne-Leigh

Sievert, April (Indiana University), Wayne Huxhold (Indiana University), Ben Barnes (Shawnee Tribe) and Kelli Mosteller (Citizen Potawatomi Nation)

[266] *Tribal History Partnerships and the Great Lakes/Ohio Valley Ethnohistory Collection at Indiana University*

Relationships initiated through NAGPRA-related consultation can foster collaborations to provide access to historic resources to federally recognized tribes. The Great Lakes and Ohio Valley Ethnohistory Collection at the Glenn A. Black Laboratory of Archaeology at IU was gathered by Erminie Wheeler-Voegelin to provide evidence for twentieth century Indian Claims Commission lawsuits. Tribal scholars are collaborating with IU staff to plan and implement a digitization program to make archives available online to tribal scholars. In the process an instrumental resource for researching cultural affiliation is being revitalized and preserved, and tribal scholars acquire sources that meet tribal cultural heritage objectives.

Sillar, Bill (Institute of Archaeology, UCL)

[105] *Viracocha's Vulcanism: The Cultural Biography of a Volcano*

The paper uses archaeological, historical, ethnographic and geological approaches in an investigation of a small volcano in the department of Cuzco, Peru. Kinsich'ata erupted around 10,000 years ago, but its presence in the landscape is attributed to the animating deity Viracocha in an origin myth that ties Kinsich'ata into a wider narrative cycle locating the social order within the experienced landscape. Kinsich'ata's eruption disrupted the landscape, altering the path of the river Vilcanota and the agricultural potential of the area, and creating a distinctive landscape feature and cultural resource. Archaeological evidence suggests that the volcano was a focus of activity from the Formative, subsequently both the Wari and the Inca constructed major ritual centers here, and Kinsich'ata is an Apu (mountain deity) for those living in the area today. The volcanic rubble has provided a location and material for domestic and state construction, including an Inca 'temple' dedicated to Viracocha and artificial lake that were the focus of ritual procession and pilgrimage. This considers the relationship between mobility and fixed landscape features as pilgrimage, the composition of ritual offerings, and the transport of materials is used by Andean people to conceptually integrate and engage with animate places.

Silliman, Stephen (University of Massachusetts Boston) and Katherine Sebastian Dring (Eastern Pequot Tribal Nation)

[61] *Integrating Community, History, and Objects: Reflections on Eastern Pequot Reservation Archaeology*

We use this paper to take stock of more than 12 years of collaboration between the Eastern Pequot Tribal Nation and the University of Massachusetts Boston in the context of the Eastern Pequot Archaeological Field School. This is important to discuss in a session dedicated to a broader Pequot archaeology, as the Eastern Pequot and Mashantucket Pequot nations share many cultural, historical, and familial connections, yet have had different political and economic positions and archaeological programs over the last four decades. Taking stock means not only discussing what archaeological evidence has been recovered, how this information can speak to different audiences (students, tribal members, archaeologists, politicians), and what parallels or divergences can be found with respect to the Eastern Pequot's cousins at Mashantucket, but also raising the question of how to make the practice of archaeology even more relevant and engaged. In particular, we want to consider how to incorporate archaeological methods and materials into local knowledge and community social memory and how to enhance the accessibility of information and practice. This engages the ongoing challenge balance of "giving" and "taking" embedded in the process of archaeological research done with Native communities on their historic lands.

Sills, E. Cory (University of Texas at Tyler)

[238] *Reevaluation of the Placencia Salt Works in the Classic Maya Economy*

The Placencia Salt Works in southern Belize are re-evaluated based on 2015 field work, building on previous research by J. Jefferson MacKinnon. Comparisons are made with the Paynes Creek Salt Works based on a similar salt-water lagoon environment, salt-production artifacts (briquetage), the presence of earthen mounds, and the absence of preserved wooden architecture at the Placencia Salt Works. Study of the briquetage indicates a similar process of evaporating brine in pots over fires to make salt. At Sacapulas in the highlands of Guatemala and elsewhere, the salt content of brine is enriched by pouring it through salty soil prior to the evaporation process—in order to reduce fuel consumption. Only two of the Paynes Creek Salt Works have earthen mounds, since the other salt works were submerged by sea-level rise and any earthen mounds would have been deflated by wave action. However, mounds are plentiful at the Placencia Salt Works where wooden buildings may have been constructed in the open spaces. Spatial analysis of the Placencia mounds provides new insights into salt production and provides an indication of the ancient extent of brine enrichment at the Paynes Creek Salt Works. Ongoing field research will evaluate the spatial context of production.

[158] *Moderator*

[158] *Discussant*

Sills, E. Cory [238] see Feathers, Valerie

Silva, Ana Maria [103] see Lillios, Katina

Silva, Rosicler (Pontifica Universidade Católica de Goiás), Julio Rubin de Rubin, Daniel Santos Correa, Sergia Meire da Silva and Jordana Batista Barbosa

[167] *New Perspective in the GO-CP04 Archaeological Site. Goiás, Brazil.*

Research conducted in the 1980s in the area of the GO-CP-04 litho-ceramic archaeological site identified drawings, engravings and a burial ground. The shelter measurements averaged 40m in length by 4m in width. The radio carbonic dates vary between 4,455+/-115 years B.P. and 1,020+/-40 years B.P. With the resumption of investigations, a reassessment of the characteristics of the shelter is presented. It is considered that the site area may be more than 50 m long and the slope would be more distant from the dwelling area, in this case, comprising a relatively flat intermediate area, as opposed to the initial hypothesis of a smaller living area. The results obtained so far are important to the proposition of hypotheses related to the reconstruction of the shelter and the development of a methodology to be used in places from the end of the Pleistocene and early Holocene.

Silverstein, Jay (Univ of Hawaii/DPAA) and Robert Littman (University of Hawaii)

[224] *More than a Lexicon: Uncovering Evidence of the Events on the Rosetta Stone*

The Rosetta Stone is one of the most famous inscriptions in the world, yet few could actually tell you about its content. The topics on the stone relate to the reign of Ptolemy V and provide critical insight into the nature of Hellenism, imperial structure, indigenous relations, ideological assimilation, and process and consequences of the Great Rebellion of 204–185 B.C.E. against Macedonian rule. While textual references to the rebellion abound there have been few archaeological correlates. At Tell Timai (ancient Thmuis) we have evidence suggesting that the violence of the Great Rebellion had profound repercussions shaping the local and long-term nature of Greek imperial strategy. Archaeological data suggests that Thmuis, a tributary town of the adjacent regional capital of Mendes, was subject to significant violence during the period of the Great Rebellion. IN the aftermath of the violence there was a period of rebuilding and the usurpation of the political and economic dominance of Mendes resulting in the shift of the nomarchy from Mendes to Thmuis and a transition of the primary administrative organization from the theocratic temple complex to a Greek poleis.

Simek, Jan [131] see Yerka, Stephen

Simek, Jan and Alan Cressler

[175] *Landscapes of Mississippian Rock Art in the Southeast*

Prehistoric rock art has been relatively unknown in the American Southeast until the past few decades. In the 1970s, Wellman's catalog of North American rock art contained a handful of sites east of the Mississippi River; today there are hundreds of sites recorded for Tennessee, Alabama, Georgia, Kentucky, and areas east of the Appalachian Mountains. The great majority of these sites probably date to the Late Prehistoric Period, and there are clear regional variations in how rock art was produced and in its subject matter. In this paper, we review regional variation in late prehistoric rock art in the Southeast and examine how rock art reflects ideological landscapes imposed on natural landforms in at least one major case.

Simmons, Scott (University of North Carolina Wilmington)

[32] *Bells, Blades and Bodegas: The Pervasive Influences of Payson Sheets*

Payson Sheets has influenced the work of a great number of archaeologists over the years, particularly researchers interested in the nature of households and the quotidian aspects of domestic life, lithic production and use, and in the field of 'disaster archaeology.' This paper highlights some of those influences in the work of the Maya Archaeometallurgy Project and, more recently, the Ambergris Caye Archaeological Project II, both of which are in

Belize. This paper focuses on the anthropological investigation of ancient Mesoamerican technologies, an area of research where Payson Sheets has had a particularly pervasive influence. The results of research on ancient Mesoamerican metallurgy are discussed as well as a more recent program of study on sourcing obsidian artifacts found on Ambergris Caye using X-Ray fluorescence. Households played an important role in both the production and use of metal objects at the Maya site of Lamanai, located in northern Belize. On the coastal island of Ambergris Caye, Maya households were consumers of obsidian that originated from a variety of sources throughout Mesoamerica. The results of household archaeology at these sites also will be discussed in this paper.

Simmons, Alan (University of Nevada Las Vegas, Department of Anth)

[189] *Why Colonize? A Case Study of the Early Neolithic Colonization of the Island of Cyprus*

Why humans colonize unoccupied lands, such as islands, has always intrigued scholars. Over the past few decades, researchers working on the Mediterranean island of Cyprus have documented both a Late Epipaleolithic occupation and a more substantial early Neolithic colonization episode. The number of such sites remains limited, but is growing with continuing research. For the Neolithic, both Pre-Pottery Neolithic A and PPNB occupations are now well-documented, and are as early as mainland sites. These defy earlier beliefs that the Mediterranean islands were not occupied until much later in the Neolithic. Most, but not all, sites are coastal, reflecting these new immigrants' sea orientation. Thus, we now know that early colonization occurred, but the question of why this happened remains largely unanswered. This presentation first examines characteristic elements of early Cypriot Neolithic settlements. Then, from a circum-Mediterranean framework, it looks at reasons why colonization may have occurred in the first place, at a time when the greater region was undergoing major social and economic shifts. Issues such as over-population, resource stress, economic or religious opportunity, internal dissension, or simply the urge to explore are all addressed. Some of these issues are especially relevant given the current immigration crisis in the Mediterranean.

Simms, Stephanie [127] see Parker, Evan

Simon, Rebecca [40] see Ryan, Susan

Simon, Katie, Christine Markussen (University of Vienna) and Cameron Monroe (Department of Anthropology, UC Santa Cruz)

[183] *Mapping Sans-Souci: Geophysical Survey at the Palace of Henry Christophe, Haiti*

The Royal Palace of Sans-Souci, a UNESCO World Heritage Site located in the town of Milot in northern Haiti, served as a central political space within the short-lived Kingdom of Haiti (1811–1820). Despite the critical importance this site holds for our understanding of state formation in the years following the Haitian revolution, we know precious little about the construction history of the site itself, which extended back into the Colonial Era. During the summer of 2015, archaeologists from the University of California, Santa Cruz and the University of Arkansas, collaborating with representatives of the Institut de Sauvegarde du Patrimoine National (ISPAN), initiated preliminary geophysical survey and archaeological excavation at Sans-Souci. This poster presents the preliminary results of a ground penetrating radar (GPR) survey conducted during this field season. The survey was successful in revealing features, including walls, terraces and other landscape modifications. These results provide a broader understanding of Sans-Souci's built environment, and provide insight into which geophysical methods would be most suitable for investigations in the future.

Simon, Arleyn and Stephen Reichardt (Arizona State University)

[265] *Future Salado Research: Roosevelt Archaeology at ASU Center for Archaeology & Society Repository*

Archaeological collections have vital roles in contemporary and future research activities and afford opportunities for in-depth localized studies or broad regional syntheses. The Center for Archaeology & Society Repository (formerly Archaeological Research Institute) at Arizona State University curates the Roosevelt Archaeology Projects funded by the U.S. DOI Bureau of Reclamation in cooperation with the Tonto National Forest. These well documented large scale excavations provide research and catalog databases of Salado Sites in the Tonto Basin of central Arizona dating from AD 1200 through AD 1450. Extensive excavation at large platform mound communities with well documented collections and related analyses files, and field and lab documentation provide ample empirical evidence for testing of new interpretive models of the Classic Hohokam Period (Salado) dynamics. The research request process is detailed along with a summary of the collections. In addition, the CASR also manages the extensive ASU Anthropology Collections which contain many other Southwest archaeological collections. Ongoing public outreach programming highlights research topics on the cultural heritage of central Arizona.

Simpson, Bethany (UCLA) and Emily Cole (UCLA)

[271] *Karanis and Qara el-Hamra: Spatial Organization of Settlements in the Ancient Fayum, Egypt*

The Fayum region of Egypt was transformed by extensive agricultural development in the second century B.C.E.; irrigation projects increased arable land, and many new towns and villages were founded in order to accommodate a growing population. These settlements were originally designed according to the Greek tradition of orthogonal grid planning, creating orderly "blocks" of buildings between intersecting streets. However, over time, layers of both civic and private domestic construction began to obscure the original town layout, and large public streets gave way to more circuitous alleyways between buildings. Many adaptations, both civic and social, became necessary to negotiate problems of physical access within these settlements. This presentation utilizes settlement archaeology, space syntax, and modern urban planning theory in order to explore two such Fayum settlements. The first, Karanis, was a large regional center, while the second site, Qara el-Hamra, was a much smaller village a few kilometers away. The comparison of the two sites reveals differing strategies in spatial organization, and considers variables including settlement and population size, demography, and length of habitation. The results show that instead of being reliant on official civic solutions, spatial organization often involved small-scale interactions and simple social agreements between neighbors.

Sims, Marsha

[175] *"Selfies": Culture Heroes Shown in Rock Art*

Interactions, entry, timing—issues of the "First Americans" have been strongly debated. This research focuses on archaeology, recorded histories/reenactments by people, and on large-scaled forms tying culture heroes, myths, and legends to images of the Paleoindian and use of the Front Range of Colorado. Outrepassé, reverse hinge, or overshot is a technique for stone reduction used in Clovis technology, in the Solutrean of Europe, and in a workshop/sacred center of Nohmul, a Late Classic site in Meso America. The area above is a ball court, tlachó, where a game of tlachtli is a religious

contest. The hummingbird, a culture hero, is celebrated in this contest battling giants. His face is painted blue and yellow and he carries a serpent-headed boomerang. The first animal represented in this conquest is the jaguar and this element is in rock art of the Olmec where tlachco elements originated. Are lithics sacred? Tlachco as sacred is found in Meso America and in the U.S. southwest. Discussed are sacred use of lithics, culture heroes and proboscidean, bird, and human forms represented in rock art, and the feasibility of telling a story based on published accounts using these images.

Sinclair, Amanda (University of Toronto)

[198] *New Perspectives on the Identities and Ideologies of Localized Ancient Andean Communities through the Examination of Figurines*

This paper explores the quotidian use of figurines by the inhabitants of the village of Ak'awillay in the Cusco region. Most scholars have defined figurines as political tools used to support state ideologies. This research expands on this effort and focuses on the use of figurines in domestic contexts among non-state societies. The study of figurines from Ak'awillay and comparative data from archaeological and ethnographic contexts suggest that figurines had multiple uses and included ancestor veneration, shamanistic aids, and offerings. These results shed light on small scale practices of social reproduction, the definition of ideologies, household beliefs, and social identities including status and ethnicity.

Sinensky, Reuven [178] see Lesure, Richard

Singer, Zachary (University of Connecticut) and Brian Jones (Connecticut State Museum of Natural History)

[61] *The Paleoindian Period At Mashantucket*

Multiple Paleoindian sites have been identified during the Mashantucket Pequot Museum and Research Center's (MPMRC) long-term study of Paleoindian occupations around the Mashantucket Pequot Reservation. The recovery of multiple Paleoindian sites affords the opportunity to study Paleoindian lifeways around the Great Cedar Swamp at Mashantucket. This paper provides an overview of the Paleoindian research conducted by the MPMRC and attempts to reconstruct Paleoindian land use of the Mashantucket landscape.

Singer, Zachary [61] see Kelly, John

Singleton, Hayley (University of Florida)

[133] *Midden among the Mounds: An Ongoing Study of Faunal Remains from a Platform Mound and Adjacent Midden at the Garden Patch Site (8DI4)*

This paper presents the faunal composition of a platform mound and adjacent village midden as a means of understanding subsistence, feasting, and ceremony at the precolumbian Garden Patch site, a Middle Woodland (ca. A.D. 100 to 500) multi-mound center located on the northwest gulf coast of Florida. The vertebrate faunal remains from the dense midden of Area X are compared to those of adjacent Mound II, a platform mound constructed of alternating lenses of shell midden and sand. The results of faunal analysis from both contexts highlight the extensive use of marine resources from the neighboring marsh and shallow gulf waters. A series of radiocarbon dates aligned with the stratigraphic distribution of faunal remains within Area X and Mound II suggests that the rapid construction of Mound II coincided with use of the Area X kitchen midden. Given the contemporaneity and proximity of the two assemblages, a comparison between the two contexts allows for an evaluation of the composition of mound strata in terms of potential feasting episodes.

Sissay, Fikremariam [181] see Himes, Sarah

Sitek, Matthew (UC San Diego) and Paul Goldstein (UC San Diego)

[207] *Preliminary Research into the Presence of Tiwanaku at the Site of Cerro San Antonio in the Middle Locumba Valley, Peru*

This poster presents the findings from a preliminary survey of the site of Cerro San Antonio in the middle Locumba Valley on the far southern coast of Peru. Ethnohistoric sources suggest limited agrarian potential, yet the site of Cerro San Antonio shows evidence for over 25 hectares of occupation dating from the Formative through Inca Periods. This includes at least 10 hectares of Tiwanaku domestic occupations. The middle Locumba Valley lies between two very different peripheral regions of the Tiwanaku state and may be a crucial case study for exploring the timing and direction of state expansion and collapse. The site has never been subject to problem-oriented research and is greatly endangered by looting. We discuss the extent of Middle Horizon occupation as well as other general findings, based on a preliminary reconnaissance and surface collections. We will also address current issues of looting at the site and outline future research plans.

Sitek, Matthew [255] see Huggins, Kathleen

Skaggs, Sheldon [120] see Cartagena, Nicaela

Skaggs, Sheldon (Bronx Community College CUNY), Nicaela Cartagena (Bronx Community College CUNY), Michael Lawrence (Pacbitun Regional Archaeology Project) and Terry Powis (Kennesaw State University)

[234] *Late Classic Maya Granite Working Community at the Tzib Group, Pacbitun, Belize*

The ancient Maya site of Pacbitun is located between two major ecozones, the Belize River Valley and the Mountain Pine Ridge. Excavations from 2012 to 2015 at the Tzib group in the periphery of Pacbitun first revealed evidence of large scale mano and metate production. Excavations into a large mound, dubbed "Mano Mound" because the surface was covered with mano perform fragments, revealed that it was not only a debris pile, but also the workshop platform as well. Large granite flakes, hammer stones, and pottery shards were piled on or swept to the edges of the pile, leaving a flat, square or circular work surface which eventually built up at least 0.75m tall. Shovel testing of the surrounding landscape uncovered evidence that the first mound discovered and excavated is only one in a group of other granite workshop mounds situated among the residential structures. Based on ceramic dating, the granite working community was established in the Late Classic (A.D. 700–900) period. Workshops of this nature are rarely found, and most of what we know has previously only been gleaned from ethnographic data.

Skala, Aurora (UVIc)

[131] *"Showing up" at Rock Art Sites: Ethical Behavior while using DStretch in Heiltsuk and Wuikinuxv Territories on the BC Coast, Canada*

The results of this 2013–15 M.A. research will showcase the successful use of DStretch to bring out hidden images at pictograph sites in a geographically-remote area where prior photographs are unavailable. The examples used will be taken from First Nations Territories, primarily from Heiltsuk Nation and Wuikinuxv Nation, on the Central Coast of British Columbia, Canada. Although these examples are a case study of one region, the concepts presented may offer insight regarding sites worldwide.

These remarkable images will provide a backdrop and entry point for a discussion on rock art research ethics. This presentation will explore some of the ethical imperatives and challenges, beyond mere legalities, which should be taken into consideration and practiced when researching rock art sites. For example, levels of permission, flow of information, (data) storage, consultation/collaboration, and restoration.

Skeates, Robin

[248] *Discussant*

Skeens, Jeremy (University of Iowa)

[111] *Analysis of Ceramic Sherds from Woodpecker Cave*

Four field seasons of excavations by the University of Iowa field school have recovered hundreds of ceramic pottery sherds from the Woodpecker Cave site. Previous typological analyses of the ceramic assemblage have supported the hypothesis that the site was host to long-term seasonal occupations spanning hundreds of years. Woodpecker Cave provides a unique opportunity to study variation in technologies used during ceramic production in eastern Iowa, spanning the Middle Woodland and Late Woodland periods. Further analysis of the ceramic assemblage can provide insight into production strategies within the region. Examining temper, vessel morphology, and carbonization within the collection of sherds allows for analysis of the technological choices made during vessel production and the actual function of the vessels after production. Attempts to partially refit vessels will aid in determining overall shape and size, and provide a better understanding of the soot and carbon patterns present in the collection.

Skidmore, Maeve (Southern Methodist University)

[198] *A New Look into Camelid Management in Middle Horizon Cusco*

The Middle Horizon (A.D. 600–1000) brought dramatic changes to the Cusco region, particularly to valleys where Wari colonists settled in this period. Despite debate and research on the issue, our understanding of how Wari people altered local agropastoral arrangements in this zone remains limited. A prior study by the authors suggested that Wari populations maintained camelid flocks in a manner similar to that described for the Inca. Specifically it concluded that animals lived to maturity, potentially to intensify wool production or serve as pack animals. Collection of additional data from Hatun Cotuyoc faunal assemblages allows us to revisit earlier conclusions and address new questions.

[198] *Chair*

Skov, Eric [115] see Koerner, Shannon

Skowronek, Russell (University of Texas Rio Grande Valley), Juan Gonzalez (University of Texas Rio Grande Valley), James Hinthore (University of Texas Rio Grande Valley) and Ronald Bishop (Smithsonian Institution)

[200] *El Sauz Chert: Physical and Chemical Characterization of a Long-Used Lithic Resource in South Texas*

El Sauz chert is a lithic resource in south Texas that was used to make stone tools dating from Early Archaic (3500–6000 B.C.) to Late Prehistoric (A.D. 700) times. Located in Starr County, Texas a few miles north of the Rio Grande are two chert quarries associated with altered rhyolitic ash of the Catahoula Formation. Given its restricted occurrence, El Sauz chert offers a unique opportunity to study prehistoric exchange and resource procurement. Tools of this chert are common east of the restricted source locality, but very few artifacts have been found to the west. Previous studies published in Lithic Technology, have identified distinctive chemical and physical characteristics of El Sauz, including its high aluminum content, abundant vugs, opalized veins, smeared colorations, and pale yellowish-green fluorescence under short-wave ultraviolet light. Here we present new neutron activation analyses (30 elements) and Portable XRF data (10 elements) to further constrain its origin and mode of formation, and to provide criteria to differentiate tools made from El Sauz from those derived from other chert sources.

[200] *Chair*

Slater, Donald (Phillips Academy, Robert S. Peabody Museum, & Brandeis University)

[294] *Getting Carried Away - A Petroglyphic Litter Scene from Cenote Ceh' Yax, Yucatan, Mexico*

During reconnaissance in a dry cenote at the small site of Ceh' Yax, Mexico, members of the Central Yucatan Archaeological Cave Project discovered an in-situ monument incised with a petroglyphic scene depicting a dignitary seated within a litter. Although litters are not commonly shown in Mesoamerican imagery, they do appear on lintels, wall graffiti, codex-style Maya vases, and as ceramic effigies. This paper will present an analysis of Mesoamerican litter iconography which will demonstrate that the artist who inscribed the monument at Ceh' Yax followed widely utilized elite-style Classic period graphic conventions. More broadly, this conclusion indicates that despite the humble size of the settlement of Ceh' Yax, those who utilized the cenote were active participants in a far-reaching network of cultural exchange.

Slaughter, Mark (Bureau of Reclamation), Richard Anduze (Salt River Project), Jeremy Iliff (Office of Surface Mining and Reclamation Enforcement), Garry Cantley (Bureau of Indian Affairs) and Terry McClung (Bureau of Indian Affairs)

[64] *Kayenta Mine on Black Mesa*

The Black Mesa Archaeological Project (1967–1987) was undertaken to clear archaeological sites to mine coal for the Navajo Generating Station. The original permit for this work expires in 2019. Working with project proponents, tribes, and other groups/individuals, Federal agencies are in the process of re-permitting (2019–2044) project features; these include the Kayenta Mine, Navajo Generating Station, a railroad, and two large powerlines. This poster summarizes the on-going cultural resource activities connected with the re-permitting process.

Slayton, Emma [220] see Hofman, Corinne

Sload, Rebecca

[294] *Reverential Termination of the Sun Pyramid Cave, Teotihuacan*

Reverential termination is hypothesized for the human-made cave beneath the Sun Pyramid. While the idea of a mid-third century A.D. termination is not new and is based on radiocarbon dating and construction of blockages in the rear section of the cave and use of concrete, qualifying the termination as reverential is a refinement. The most direct information comes from examination of blockage construction, which is supported by two other lines of evidence. One also lays within the cave and involves analysis of the construction sequences of the four "narrowings," artificially constricted passages in the front section of the cave whose access was not affected by blockage construction. Original sections of the narrowings appear to have been terminated with the rest of the cave, followed by enlargements that mimic the originals. The copying indicates continuity of belief and respectful post termination ritual use of the cave. The other line of evidence is based on the hypothesized, recently published, interplay between cave and Pyramid in which radiocarbon dates, ceramics, and spatial relationships suggest that Teotihuacanos executed a well-conceived plan for both Pyramid and cave to terminate the mountain cave and redefine the Pyramid without cave. In all instances, reverence is indicated.

Sloan, Anna (University of Oregon)

[221] *Learning to Listen: Quinhagak Voices Teaching about Gender*

This presentation describes how archaeologists are using the knowledge of community stakeholders from the Yup'ik village of Quinhagak, Alaska to analyze gender dynamics at Nunalleq (GDN-248), a pre-contact village site located on the Yukon-Kuskokwim Delta. During the summer of 2015, Quinhagak residents were invited to participate in semi-structured interviews about gender roles and activities in Yup'ik society and about the relevance of gender to stakeholder questions about the past. Interview data suggest that gender in Quinhagak is defined by kinship and subsistence obligations, that people become gendered through processes of learning and teaching, and that values of community cohesion in many ways eclipse gender divisions. Quinhagak residents are interested in learning more about the gendered lives of their ancestors, with questions that both complement and differ from those of the archaeological research team. Archaeologists are now using the community-derived knowledge from this project to create a locally-relevant model for interpreting pre-contact gender dynamics at Nunalleq. Integrating Yup'ik perspectives into this gender analysis creates meaningful opportunities for community engagement with the Nunalleq site while also honoring the expertise of Indigenous stakeholders in interpreting their heritage.

Slobodin, Sergey [185] see Speakman, Robert

Slotten, Venicia (University of Cincinnati) and David Lentz (University of Cincinnati)

[32] *Weeds, Seeds, and Other Maya Needs*

Our understanding of the diet, subsistence, and agricultural practices of ancient Maya commoners has been remarkably enhanced thanks to many years of archaeological investigations at Cerén led by Payson Sheets. The recovery of paleoethnobotanical remains at the site has revealed not only the storage of various well-preserved foodstuffs, but also extensive house gardens and agricultural fields filled with lasting impressions and carbonized remains of a diverse set of plant species including maize, manioc, agave, squash, chili peppers, cotton, and tree crops such as avocado, guava, calabash, nance and cacao. Besides the annual crops, recent excavations within Cerén's agricultural fields reveal a strong presence of weedy species and lesser known woods, suggesting a diverse assemblage of plants comprised the ancient agricultural biome. The large amount of small seeds and achenes recovered from the cultivated fields for the most part represent annual weedy species that would have been relatively easy to manage by the Cerén inhabitants, if so desired. Modern Maya associate many useful applications with these intrusive plants and the strong presence of the weeds at Cerén suggests that the weeds possibly held a positive and tolerable relationship with the villagers.

Sluka, Victoria (University of Notre Dame) and Ian Kuijt (University of Notre Dame)

[37] *International Intellectual Property Law and Traditional Crafts: A Case Study*

This case study uses historic looms and weaving techniques from around the world to explore the complexities of protecting traditional craft technologies used by modern groups. Descendant and indigenous communities worldwide, especially in developing nations, are using sale of their traditional crafts as a way to benefit from the increasingly popular cultural tourism industry. Cultural heritage management initiatives and the ethical sourcing of cultural materials call for more relevant and focused intellectual property laws around the world. By legally protecting the processes of production and the traditional colors, motifs, and forms associated with traditional crafts, indigenous groups can gain legal control of their heritage, and in turn control any economic benefit that may come from it by barring cultural appropriation through illegitimate copies. However, as this study illustrates, existing intellectual property laws cannot be effectively applied to very old and complex traditional skills. A primary difficulty comes in the form of defining ownership of tangible and intangible cultural heritage. With a focused analysis of this and related problems, solutions can begin to be explored which could aid in the economic growth of indigenous communities, and therefore encourage the retention of innovative traditional knowledge.

Smallwood, Ashley [218] see Jennings, Thomas

Smit, Douglas (University of Illinois at Chicago) and Antonio Coello Rodríguez (Independent Investigator)

[281] *Mitayos and Markets in Colonial Huancavelica (A.D. 1564–1810)*

Located in the Central Peruvian Andes, Huancavelica was the largest source of mercury in the Western Hemisphere and a critical source of wealth for Spain's colonial empire. The Spanish administration mobilized labor through the infamous mita, a rotational labor tax that required colonial provinces to send one-seventh of their population to work in the mines. Forced labor in Huancavelica not only exposed these indigenous miners to the horrors of colonial mercury mining, but also brought engagement with burgeoning colonial exchange systems, including access to a wide range of household ceramics. Drawing from recent domestic excavations conducted within Santa Barbara, the central camp for indigenous labor at Huancavelica, this paper analyzes the types of ceramics used by indigenous miners. Specifically, we argue that indigenous laborers, both forced and free, had access to a much wider range of ceramics than suggested by Spanish records.

[281] *Chair*

Smith, Gerald [6] see Sherwood, Sarah

Smith, April (University of Georgia), Xiaofei Li (University of Georgia) and Laurie Reitsema (University of Georgia)

[8] *Vertebral Wedging: A Potential Tool for the Determination of Parity in Archaeological Samples?*

During pregnancy, women experience lordotic posturing to compensate for the weight of the growing fetus. Biomechanical stress from lordotic posturing causes bone remodeling of the lumbar spine during pregnancy resulting in lumbar wedging, which may persist after giving birth. Persistence of lumbar wedging in skeletal samples has potential applications for estimating parity in the archaeological record. This research analyzes the possibility that lumbar wedging is observable in the skeletal record by analyzing morphometrics of lumbar vertebrae from 131 individuals with known demographic data and medical histories from the William M. Bass Skeletal Collection at the University of Tennessee. Using ANOVA analysis and mixed-effect models, we find no association between parity and lumbar wedging, but we do observe an overall trend of increasing lumbar wedging with age, which may be due to degeneration with age under bipedal loading. Though vertebral wedging during pregnancy is an observable phenomenon during pregnancy in living populations, this study indicates that the human spine is highly plastic and adaptable, and temporary stressors do not permanently alter the shape of vertebrae such that they could be used to estimate parity in archaeological populations.

Smith, Claire (Flinders University)

[10] *Socially Mediated Terrorism and Conflicting Heritage Values*

The confluence of contemporary terrorism and radical changes in the media landscape constitutes a fresh—and currently under-rated—threat to cultural heritage. Socially mediated terrorism in Syria and Iraq is underpinned by a clash in heritage values. As visual symbols of competing political, ideological and religious values, iconic cultural heritage is an increasingly likely choice for extremists seeking visual ways to maximise their impact. Not everyone ascribes to the notion of Outstanding Universal Value and the symbolic dimension of World Heritage sites can make these sites potent targets for terrorists seeking to obtain global attention for a political cause. What is new is the opportunity that the media revolution provides for the increased impact of destruction, both locally and globally.

Moreover, the ever-increasing gap between rich and poor, both within countries and between countries, exacerbates feelings of estrangement that can be used by terrorists to retard the protection of World Heritage sites. The destruction of cultural heritage will remain a problem as long as cultural patrimony—and indeed World Heritage—is shaped primarily by Anglo-European concepts of heritage, and consequently aligned with viewpoints and values that are associated with the West.

[10] *Chair*

Smith, Mara (Eastern New Mexico University)

[66] *A Descriptive Analysis of Animal Paleopathology from the Archaeological Site of Salmon Ruins*

This thesis research is a small part of the greater potential study of the interactions between people in prehistory and the animals they relied upon for food and ritual items. Analysis will compare the prevalence of osteological changes and abnormalities in the remains of wild animals and domestic turkeys at Salmon Ruin, New Mexico. Domestic turkeys, being influenced by the hand of humans, are unique cases of paleopathology that could potentially provide insight into the domestication and care of the animals that the local population came to rely on so heavily. This study also includes the creation of data collection protocols that are unique to the study of animal paleopathology in an effort to aid future research in an underrepresented field.

Smith, Michael (Arizona State University)

[129] *Housing and Society at Teotihuacan*

Housing at Teotihuacan took several forms, including apartment compounds, nonroyal palaces, residential quarters within civic structures, and perishable houses. I describe several approaches and methods that have been, or could be, applied to the analysis Teotihuacan housing. These include quantitative measures of wealth inequality using the Gini index; typological analysis of the forms of rooms, spaces, and compounds; measures of architectural standardization; distributions of surface artifacts collected by the Teotihuacan Mapping Project; and a more productive use of empirical theory and concepts of space, planning, and layout. As a unique form of urban housing in world history, the apartment compounds (and other residences of Teotihuacan) have much to teach scholars about urban life and society in the ancient city.

[171] *Chair*

Smith, Alexander (The College at Brockport, State University of New York) and Linda Gosner (Joukowsky Institute for Archaeology and the Ancien)

[147] *Site-Based Survey at S'Urachi: Deep History, Thick Shrubs and Historical Connections in West Central Sardinia*

The nurage of S'Urachi is a Bronze Age stone monument that has served a central place in the landscape of west-Central Sardinia for millennia. Since 2013, the archaeological site has been the subject of an ongoing investigation into the daily lives of local inhabitants living around the nuraghe from the Bronze Age through the Roman period. The project—a joint effort of an international team funded by Brown University and the Comune di San Vero Milis—has investigated the immediate surroundings of S'Urachi through micro-topographical, soil, and geophysical survey as well as targeted excavation. In complement to this research, we carried out intensive pedestrian survey in 2015 to investigate the long-term trends in occupation and use of the site. The unplowed landscape with heavy vegetation required an innovative, more intrusive survey approach than is traditionally used in Mediterranean survey. The results shed light on trends of occupation in the late Iron Age and Roman periods and patterns of garbage deposition from the Early Modern Period onwards. This poster presents our preliminary results, highlighting the methodology developed for coping with the environmental challenges at S'Urachi and the future plans for prospection in and around the site.

Smith, Benjamin (University of Florida)

[181] *Barbed Bone Points: Ethnoarchaeological and Archaeological Perspectives on Selective Fishing on the Shores of Lake Turkana.*

As riverine and lacustrine environments expanded across north tropical Africa at various times in prehistory, humans developed special methods for fishing or “aquatic hunting.” Barbed bone “harpoon” points, used across much of Africa north of the equator during early Holocene times, represent an especially

compelling innovation. Studying barbed bone points from Turkana Basin, NW Kenya can shed light on hunter-gatherer technology, tool use, and resource acquisition in a context of environmental and social change. Ethnoarchaeological studies of modern local fishing practices reveal contexts of near-shore fishing methods and tools analogous to those of early Holocene Turkana. For example, modern Turkana fishers have traditionally employed harpoon-like tools to acquire the largest, often shallow water fish species, while using baited hooks and traps for smaller and deep-water species. Reproduction experiments demonstrate the significant time required to produce these points and provide a foundation for reanalyzing collections from archaeological sites west of Lake Turkana. An analysis of these collections demonstrates new ways of investigating variability in site use. The poster concludes with some reflections on the implications of barbed bone point research for better understanding changing mobility strategies, resource intensification and technological innovation during early Holocene times.

Smith, Ryan, Patrick Mullins (University of Pittsburgh), Steve Wernke (Vanderbilt University) and Brian Billman (University of North Carolina, Chapel Hill)

[205] *A Comparison of Various Technologies to Capture Low-Altitude Aerial Photography as Alternative Methods in Mapping Archaeological Landscapes*

Site-based archaeological projects often face a common challenge of producing detailed maps of large, complex areas. The use of traditional site-mapping techniques (e.g. total station) can be expensive and labor-intensive. Alternatively, a variety of platforms provide archaeologists with practical and inexpensive approaches to aerial photography and photogrammetric mapping. Here, the authors explore three different approaches to aerial photography as alternatives to traditional methods of site mapping: unmanned aerial vehicles, large-framed kites, and meteorological balloons. All three of these platforms have proven effective in terms of their ability to lift lightweight payloads that can produce high-resolution maps of extensive archaeological areas. We focus on differences and advantages of each approach from the perspective of in-field use across diverse settings as well as the post-production of high-resolution maps. Testimony of these separate technologies comes from three different sites in Peru, two within the southern highlands and one on the northern coast. Using our experience mapping these sites, pros and cons as well as a detailed methodology for attaining aerial photography with each approach are outlined.

Smith, Kevin (Haffenreffer Museum, Brown University)

[217] *Introducing "Envisioning and Re-envisioning Arctic Archaeology: The Enduring Legacies of J. Louis Giddings (1909–1964)"*

J. Louis Giddings' (1909–1964) pioneering archaeological research in the Arctic integrated natural science perspectives with archaeological investigations, ethnographic and folkloric research, collaboration with indigenous communities, and experimentation with cutting-edge methods. He introduced dendrochronology and dendroclimatology to Arctic archaeology, developed the concept of "beach ridge archaeology"—using the sequential formation of maritime beach ridges to date relatively archaeological sites upon them, discovered the Denbigh Flint complex—paving the way for understanding ASTt connections from eastern Siberia to Greenland, established the western Arctic's Holocene archaeological sequence through research at Cape Krusenstern and Onion Portage—the first deeply stratified interior archaeological site investigated in Alaska, and brought his findings to scientific and public attention through scientific articles, popular books, and Brown University's Haffenreffer Museum of Anthropology. Since Giddings' death in 1964, his perspectives, students, and collections have guided or influenced northern research. This introduction contextualizes Giddings' research and life in his times, when northern research was considerably different than we find it today, discusses the extent of the collections and archives he generated and asks what can still be done with these, with the sites he investigated, and with the concepts on which his research was based as our field sets new priorities for northern research.

[217] *Chair*

Smith, Catherine (Indiana University) and Clifford T. Brown (Florida Atlantic University)

[246] *Rethinking Population Dynamics of the Belle Glade Prehistoric Culture*

The Belle Glade prehistoric culture of central peninsular Florida is very poorly known. Through standard osteological analyses of 78 individuals from Belle Glade Mound (8PB41), type site for the culture, estimates for age, sex, and stature were calculated and observations of dental and skeletal pathologies were noted. Sex could be estimated for 26 males and 25 females. Age distributions varied stratigraphically but were dominated by young adults aged 20–35 and middle adults aged 35–50. The age distribution, particularly the 5p15 ratio, suggested demographic growth for a nonagricultural population showing little skeletal evidence of nutritional distress, perhaps made possible by the abundance of wetland resources in this region.

Smith, Larissa (University of Illinois at Chicago)

[252] *Making It Cool: Modern Lessons in Reinterpreting, Reappropriating and Understanding Hunter Gatherer Studies*

Studies of hunter-gatherers have recently garnered less attention than ever before. This has occurred in large part due to a correlation between a reduced number of forager societies and relevancy with such reduced numbers. In effect, there exists a dogma where studying hunter-gatherers is no longer pertinent to today's society, nor to the anthropological subfield. However, my paper begs to differ. Hunter-gatherer studies, specifically my own amongst modern populations of the Ata of Negros Island of the Philippines, continues to provide fruitful and revitalizing information on hunter-gather studies, complexities associated with dealing with modernity, and most significantly, deeper insights into ways that scientists can understand multi-varied levels of resiliency amongst hunter gatherers diachronically and spatially. My ethnoarchaeological research acknowledges that forager societies still remain resilient proposing that adaptations to modernity undertaken by forager societies described by researchers for the past half-century, not only apply today, but can also be used to elaborate on multi-varied ways that foragers have adapted to modernity in the past. Due to our auspicious ability to tap into these still existing marginalized societies, lessons are still to be learned about foragers and these perspectives may be the keys to invigorating hunter-gatherer studies for the future.

Smith, KC (Consultant)

[260] *Discussant*

Smith, Lindsey (Pagosa District Archaeologist), Danyelle Leentjes (CRIA Administrative Director), Paul Blackman (Recreation Staff, Pagosa Ranger District, San Juan), Nadia Werby (CRIA Marketing Director) and Sue Fischer (CRIA Board Member, Volunteer and Tour Guide)

[267] *An Evolving Partnership: the San Juan National Forest, the Chimney Rock Interpretive Association and a New National Monument.*

Chimney Rock National Monument, designated by President Barack Obama on September 21, 2012, is located within the San Juan National Forest in southwestern Colorado. The 4,726 acre monument preserves and protects hundreds of prehistoric sites (including a Chacoan outlier great house and kiva) and resource gathering and use areas associated with the ancestors and families of numerous Native American groups with ties to the greater American Southwest. The stewardship and sustainability of this significant landscape rest on the Forest Service and its partners, including its relationship with the

Chimney Rock Interpretive Association (CRIA). CRIA, a 501(c)(3) non-profit volunteer organization, currently manages day-to-day operations at the monument under a special use permit with the Forest Service. Following the designation of Chimney Rock as a National Monument, recreation, tourism, educational outreach and research activities continue to increase. As the need for management support and oversight of the Monument grows, this unique collaboration between the Forest Service and CRIA will morph and mature through opportunities and challenges in its evolution.

Smith, Karen (University of South Carolina) and Brandy Joy (University of South Carolina)

[293] *A Diachronic Perspective on Colonoware from the J. Joyner Smith Plantation*

Recent work on SC DNR's Fort Frederick Heritage Preserve, once part of the J. Joyner Smith Plantation in Beaufort County, South Carolina, offers an opportunity to study changes in ceramic consumption through time. Utilizing archaeological samples from several distinct occupations on this Sea Island cotton plantation, we chart changes in colonoware abundance, in particular, and relate them to larger socio-economic changes taking place across the region during the early nineteenth c. In addition to using DAACS data in our comparative analyses, we draw on a constellation of thoughtful archaeological research on slave settlements in Beaufort County.

Smith Marquez, Sean

[101] *Cultural Dynamics and Influences in Jalisco's Central Plateau during the Late Classic-Epiclassic Period: The Case of El Palacio de Ocomo*

The El Grillo Complex (A.D. 300–600) of Jalisco's central plateau, as defined by Galvan in the Atemajac Valley, is recognized as a dynamic and changing society that was integrated in the emergent Epiclassic cultural system of the Mesoamerican northwest. The excavations done in the last few years at El Palacio de Ocomo by the Oconahua Archaeological Project reveal a close relationship between this site and the El Grillo Complex. At the same time, ceramic analysis show elements that are considered diagnostic in assemblages from distinct northwestern Mesoamerican societies established at the site in the same period. Samples dated via radiocarbon-14 allow us to establish the constructive chronology, which in turn helps explain the drastic changes in the architectural patterns of the main structure at El Palacio de Ocomo. These results support current hypotheses regarding the site's origins and its contacts with other regional actors.

Smyth, Michael (The Foundation for Americas Research, Inc.), Timothy Beach (University of Texas) and Eric Weaver (University of Cincinnati)

[130] *Climate Change and Chiefdom Ecodynamics in the Eastern Andean Cordillera of Colombia*

Exploratory research into climate change and the formation of chiefdoms took place in the Valley of Leiva. Preliminary findings from cultural-environmental contexts provide extraordinary interdisciplinary data. A stone-walled, oval-shaped elite building with compacted earthen floors, post-holes, and artifact-ecofact assemblages (decorated pottery, spindle whorls, deer fauna, and stone monoliths) was revealed near El Infiernito. Soil survey along the Rio Leyva produced evidence for major erosion and sedimentation events now being dated. Penetrating cores and deep horizontal trenches along the river floodplain discovered a possible irrigation canal associated with Prehispanic ceramics and an upright wood post from a buried house structure. Exploration of the Cueva de la Fábrica about 7 km to the north encountered active speleothems including stalagmites and water samples collected for paleoclimate reconstruction. Research will continue into the role of drought, erosion and sedimentation, flooding, and glacier dynamics. Early results suggest that atmospheric phenomena associated with the Southern Oscillation and its El Niño and La Niña episodes (ENSO) contributed to climatic variability in precipitation and temperature that would have altered highland glaciers, effected river levels, caused major erosion, and reconfigured landscape hydrology. Such environmental conditions would have greatly impacted the evolution of ranked societies dependent on irrigation.

Smyth, Heather (Arizona State University) and Christopher Carr (Arizona State University)

[286] *Scioto Hopewell Concepts of Soul-Like Essences in Humans: Mortuary Evidence in Light of Historic Woodland and Plains Native American Concepts*

Scioto Hopewell conceptions of soul-like essences in humans are evident in the systematic placements of grave goods of particular kinds at particular bodily locations of inhumations, and with insights from comparative information on historic Woodland and Plains Native Americans. Analysis of 284 burials from 11 Scioto Hopewell cemeteries indicates a recognition of one "free" journeying soul and multiple "body" souls; their bodily residences, locations of exit upon death, and likely directions taken; differing functions of different souls; and different "medicines" placed with different souls. Whether souls of individuals of different ages, sexes, and communities were thought to vary is explored.

Snitker, Grant (Arizona State University)

[72] *Fire, Humans, and Landscape Evolution: Modeling Anthropogenic Fire and Neolithic Landscapes in the Western Mediterranean*

Archaeological and paleoecological analyses demonstrate that human-caused fires have long-term influences on global terrestrial and atmospheric systems. For millennia, humans have intentionally burned landscapes to drive game, clear land, engage in warfare, and propagate beneficial plant and animal species. Around the world, Neolithic transitions to agriculture often coincided with increases in fire frequency and changes in vegetation community composition and distribution. Although this phenomenon is commonly identified in paleoecological studies, archaeological research has not fully incorporated the spatial and temporal dimensions of anthropogenic fire into discussions of the development of agricultural landscapes. Coupled agent based models (ABM) and geographic information systems (GIS) offer a new approach to anthropogenic fire that links social and biophysical processes in a virtual "laboratory" where long-term scenarios and outcomes can be tested. This paper outlines new, integrated ABM and GIS models that draw from ethnographic examples of agricultural burning in the Mediterranean, charcoal production and dispersion equations, and sedimentary charcoal records. Long-term dynamics of anthropogenic fire regimes are explored through a case study in the Western Mediterranean (Eastern Spain).

[72] *Chair*

Snoeck, Christophe [290] see Ostapowicz, Joanna

Snortland, J. Signe [177] see Banks, Kimball

Snow, Meradeth [185] see Tifental, Emilia

Snow, Meradeth (University of Montana), Martha Gustafson (Eastern New Mexico University) and Kathy Gore (Eastern New Mexico University)

[195] *Kiva B Internments at the Mine Canyon Site, New Mexico: A Bioarchaeology and Ancient DNA Approach*

Excavations at the Mine Canyon site, a PIII Chaco outlier near Farmington, New Mexico, revealed a cluster of thirteen individuals interred within Kiva B. Ancient DNA analysis of the individuals from the site demonstrated that six of the Kiva B internments belonged to the same derived form of Haplogroup A, suggesting a matrilineal relationship. Recent analysis of their burial positions suggests the Kiva B individuals are distinct from others at the site, further supported by a lack of grave goods. Additional analysis of pathology, dental calculus and decay, age distributions, and other morphological traits were also evaluated to further test whether these individuals are distinct. Synthesizing the data from this group of individuals, comparisons are made to modern and prehistoric populations in the desert Southwest. The results are discussed in terms of possible evidence of site abandonment, disease, and witchcraft.

Sobel, Elizabeth (Missouri State University) and Virginia Hutton Estabrook (Armstrong State University, Savannah, Georgia)**[39]** *The Archaeological Utility of ACTUS: An Alternative Method of Contingency Table Analysis Using Simulation*

Archaeologists rely heavily on contingency table analyses of count data to infer relationships between variables and proportional differences between populations. For example, archaeologists often use contingency table analyses of sample data to make inferences about inter-site variation in lithic raw material type proportions. The most common methods for making these inferences are the Chi-Square test and Fisher's Exact test. However, the former cannot be applied to small samples and the latter cannot be applied to tables larger than 2x2. Consequently, many archaeological studies rely only on sample proportions to draw conclusions about population proportions. We suggest an alternative approach using ACTUS (Analysis of Contingency Tables Using Simulation), a computationally intense simulation program developed by George Estabrook and used mainly in biology. Compared to traditional methods, ACTUS offers four advantages: it enables rigorous statistical inferences despite low counts; it generates probability values for each individual cell, aiding interpretation of probability values generated for the entire table; even the least quantitatively oriented archaeologist can understand how the program works; and the free software operates rapidly, producing results based on thousands of simulated tables in just seconds. Here we explain the method and use several archaeological examples to demonstrate its utility.

Söderström, Mats (Swedish University of Agricultural Sciences) and Christian Isendahl (University of Gothenburg, Sweden)**[263]** *Remote and Proximal Sensors for Field Mapping of Amazonian Dark Earths*

Brazilian and Swedish archaeologists and soil scientists collaborated in the multidisciplinary research project Cultivated Wilderness (CW) to investigate Amazonian Dark Earth (ADE) locations in the Santarém-Belterra region of the Brazilian Amazon. One of the goals of the project was to investigate the potential of rapid geophysical data collection to assess the properties and spatial distribution of ADE. About 300 reference soil samples were collected at different ADE locations. A range of sensors (based on various principles: electromagnetic induction, gamma-ray spectrometry, x-ray fluorescence, reflectance spectroscopy, and remote sensing) were used both in the field and in the laboratory. This presentation synthesizes the potential of these sensors in ADE surveys.

Sol, Felipe [97] see Martin, Alexander

Solimano, Paul [114] see Gilmour, Danny

Solinis-Casparius, Rodrigo (University of Washington), Anna S. Cohen (University of Washington) and Kyle R. Urquhart (University of Arkansas)**[101]** *Urbanism in the Purepecha Heartland at Angamuco, Michoacan*

Despite over 70 years of research in the Lake Patzcuaro Basin of Michoacan, there has been limited work focusing on pre-Purepecha and Purepecha urbanism in the region. In this paper, we discuss how recent survey and excavation data from the ancient city of Angamuco (c. 250–1530 C.E.) is helping us to evaluate whether suggested urban models from different parts of Mesoamerica are applicable in western Mexico. Alternatively, is there evidence for a distinct type of west Mexican or Purepecha city? What types of archaeological materials can help us to best address this question? Here we examine several specific examples of urban life at Angamuco, including the configuration of household complexes, accessibility within the site, and evidence for social difference. Our study contributes to a wider discussion about the organization of urban space and how we can compare spaces within and between ancient cities.

Solis, Kristina (University of Texas at San Antonio)**[115]** *South Texas Archaic Hunter-Gatherer Mobility Patterns: A Study using Strontium Isotope Analysis*

Strontium isotope ratios from human enamel can be used to estimate the general origin of individuals and are becoming an important tool in archaeology for studying human mobility. This presentation will illustrate the results of a pilot study looking at mobility patterns for south Texas Archaic period hunter-gatherers using strontium isotope analysis. Six human teeth from the south Texas mortuary site of Loma Sandia, dating to about 2,850–2,550 years ago, were used in this study. Three of the teeth are from remains sexed as female and three from males, all adults aged 25 and up. Enamel and bone from faunal samples were analyzed to find the bioavailable strontium from two geological regions, one of which is the region where Loma Sandia is also located. Strontium isotope analysis will show if the six individuals buried at this site had grown up in the region or if they migrated to the area later in life. If there are different strontium isotope signatures between males and females, and the geologic regions, it may indicate exogamy related mobility patterns as well. In addition to the results of this study, implications for hunter-gatherer archaeology and directions for future research will also be presented.

Somerville, Andrew D. [44] see Streuli, Samantha A.

Somerville, Andrew (University of California, San Diego) and Jose Luis Punzo Díaz (Instituto Nacional de Antropología e Historia, Cen)**[74]** *Escaping Collapse in Northwest Mexico: Social and Environmental Factors of Resiliency at La Ferreria, Durango, Mexico*

The end of the Mesoamerican Classic Period (ca. AD 900) was a time characterized by widespread social change, political upheaval, and broad regional drought conditions. In Northwest Mexico, several large centers such as La Quemada and Alta Vista were abandoned and never reoccupied. The site of La Ferreria in the Guadiana Valley of Durango, however, remained an important site for several centuries into the Postclassic Period. This presentation explores the social and environmental factors that may have contributed to the resiliency of this center during a time of broader demographic reorganization. We present survey data from the Guadiana Valley to explore variations in population between the Classic and Postclassic occupations of the region and discuss La Ferreria's trade connections with coastal communities over time. Finally, we present stable carbon, nitrogen, and oxygen isotope

results from cottontail and jackrabbit bones to explore environmental change through time. Preliminary results demonstrate that La Ferrería experienced increases in long distance trade, population growth, and wetter conditions around A.D. 900, suggesting that the Valley enjoyed favorable environmental conditions and may have served as a commercial center and refuge for populations displaced by political upheavals, violence, or drought in neighboring regions.

Sonderman, Elanor (Texas A&M University) and Crystal Dozier (Texas A&M University)

[40] *Collections as a Teaching Resource: A Case Study*

The Anthropology Department at Texas A&M University has an extensive but largely underutilized collection of unprovenienced artifacts, intended for use as teaching collections. Many of these materials have diagnostic attributes but have not gone through the typing process and, therefore, cannot yet be fully incorporated into the teaching collections. The authors have designed several projects for students in introductory archaeology and old world prehistory courses that give these students the opportunity to have hands on experience with artifacts and learn what it takes to understand archaeological material. These projects are pulling double, if not triple duty—students learn not only how to identify and handle artifacts, but also learn how collections and curatorial facilities function and operate; the curator of the collections also benefits not only from the labor but also from ability to encourage young minds to appreciate anthropological collections and collections research.

Sonnemann, Till [222] see Laffoon, Jason

Sonnenschein, Aaron [135] see Zborover, Danny

Soto Maguino, Jorge Luis [134] see Lofaro, Ellen

Soto-Centeno, Angel [222] see Steadman, David

South, Katherine (Southern Illinois University Carbondale)

[291] *The More Things Change: Similarities and Differences in Pastes from Preclassic and Postclassic Pottery in the Western Petén Lakes*

Investigations in the western Petén lakes area have provided useful collections of pottery excavated from a variety of sites ranging from the Middle Preclassic to the Contact periods. This abundance has enabled intensive study of pottery from both macroscopic and compositional perspectives. This paper compares compositional results from Middle Preclassic and Postclassic pottery samples collected and analyzed by the authors. A comparison of petrographic analysis from thin sections demonstrates similarities between Middle Preclassic angular calcite pastes and pastes from the Postclassic Kulut Modeled type. Chemical analysis of the same sherds produces largely dissimilar results with the exception of two Middle Preclassic sherds from Zacpetén. These similarities and differences raise questions about the longevity of manufacturing techniques such as raw material acquisition areas and paste recipe use. Answering these questions draws on topics such as identity and technological decision-making by inhabitants separated by several thousand years.

[109] *Discussant*

Soza, Danielle [67] see Lea, Trevor

Sparks, Lisa

[67] *Construction of a Mule Deer General Utility Index*

Optimal foraging models and faunal analysis to interpret diet require quantitative data to negate variables of results. With the collection and processing of eleven mule deer (*Odocoileus hemionus*) in the Sierra Blanca Region, New Mexico, a statistically significant database for analysis is constructed. Previous researchers collected a wide range of data with different methods. By synthesizing it into a solid and replicable method an index can be developed for subsequent species to enable accurate comparisons. The three criteria that provided for a broad sample are an even distribution of males and females, their collection through the seasons and ages that range from birth to natural death. Data collected are weights for meat, marrow and grease, processing times to determine the return rate and kcal/g yield for the energy content. There is an observed difference between mule deer GUI values of adults and juveniles, the sexes and seasons. The indices are compared to those constructed by Binford (1978) for caribou and Jacobson (2002) for the white-tailed deer. The mule deer GUI is applied to the faunal data of the Bonnell and Phillips sites in the Sierra Blanca region to determine differential transport of limb bones.

Sparrow, Tom [269] see Evans, Adrian

Spaulding, Britta (University at Buffalo)

[145] *Revolutionizing Rural Industries: Issues of Access and Scale*

In recent years, industrial archaeology has come to be more associated with historical archaeology when it comes to creating perspectives from which to analyze the evidence of economic industries of all sorts. Farm sites and others that make up rural economic activities—mills, mines, etc.—are all sites of industry, and they should be studied together for a larger view of these industries from different economic and social scales, particularly in the regional sense. In southern Sweden from the 18th-early 20th centuries, inhabitants of farms of different types and sizes often had to combine many of these activities in order to make a living, due to rising populations, marginal environmental conditions, and other social problems. I look at several rural industrial sites in Småland and comparative sites and use a combination of historical and industrial perspectives to see if they were able to take up new advancements in technologies, and compare the results of that adoption on success and continuity. Mechanization and industrialization tended to allow larger players a better stake in their ownership, whereas those who had to cobble different industries together tended to have lower access to the technological adoption that could have made their futures more secure.

Speakman, Robert [39] see Loftis, Kathy

Speakman, Robert, Sergey Slobodin (North-East Interdisciplinary Scientific Research I) and Jeffrey Rasic (National Park Service)**[185]** *Obsidian Sourcing in Western Beringia*

Chemical sourcing of obsidian artifacts serves an important role in understanding prehistoric patterns of mobility, trade, exchange, resource exploitation, and cultural interaction. In Alaska and adjacent areas of Canada, more than 8,000 obsidian artifacts and geologic source samples have been analyzed by various analytical techniques resulting in the identification of more than 50 chemically discrete obsidian groups throughout this vast area. In contrast to Alaska, comparatively little chemistry-based sourcing has occurred in adjacent regions of Russia (Chukotka, Kolyma, and northern Kamchatka Peninsula). In 2015, we analyzed, using pXRF, approximately 1000 artifacts from 60+ sites housed in the archaeological collections of the North-East Interdisciplinary Scientific Research Institute in Magadan, Russia. The results of this large-scale study indicate that the majority of obsidian from Chukotka and Kolyma originate from a few sources within the Anadyr River system/Krasnoye Lake area of Chukotka. Additionally we identified several examples of long-distance movement of obsidian from Hokkaido to the northern coast of the Okhotsk Sea as well examples of obsidian movement from the central range of Kamchatka to Aion Island on the northern coast of the Chukotka Peninsula. Additionally, we documented the use of tektites from the El'gygytyn impact crater for use as stone tools.

Spears, Michael (University of Arizona and Parametrix Inc.) and Berenika Byszewski (University of New Mexico and Parametrix Inc.)**[226]** *Reconciling Responsibilities: A Case Study from the Galisteo Basin, New Mexico*

What responsibility do archaeologists have in presenting Indigenous perspectives through their interpretations? What would this presentation look like, and what bridges must be built to accommodate differing knowledge sets and perspectives? Using Thornton Ranch Open Space as a case study, we consider the constraints and possibilities of working with/for the interests of descendant communities within the context of contemporary cultural resource management in order to respect various connections and claims to significant cultural landscapes.

Thornton Ranch was purchased from private landowners by Santa Fe County to become a planned recreational area. It is located on the northern rim of the Galisteo Basin and contains an abundance of unique archaeological remains, including large petroglyph sites. Research suggests that this area may be central to the cosmos of late Coalition and Classic Period Ancestral Puebloan communities within the Galisteo Basin and beyond. Initial tribal consultation indicates that the large petroglyph sites and the surrounding landscape are spiritually significant places, and that access to them may have been restricted during prehistory. Tribal governments object to recreational use of the area, especially petroglyph sites suggesting a need for alternative management strategies.

Speller, Camilla [134] see Thornton, Erin

Spenard, Jon (University of California, Riverside)**[294]** *Building Nature: An Analysis of Landscape Modifications in the Classic Period Maya Polity of Pacbitun, Cayo District, Belize.*

This presentation offers an analysis of the architectural modifications made to the limestone karst landscape in the Classic period Maya polity of Pacbitun in the Cayo District, Belize. The Maya concepts ch'een (hole in the ground for communication with the supernatural world), and k'aax (wilderness) provide the overall framework for this paper. Through two case studies, I explore the range of karst features the Pacbitun Maya used as ch'een, the variety of ways the landmarks were modified for creating specific types of spaces within the landscape, and lastly, I discuss the social implications of these practices. The first case study is Actun Lak cave, an unrestricted ceremonial space open to all community members throughout the Late Preclassic through Early Classic periods, repurposed for a royal rain ritual just prior to the abandonment of the region at the end of the Late Classic. The second case study details the modified components of the Nohoch Tunich bedrock outcrop complex. I propose that the creation of these spaces was an aspect of Maya land management practices, but that the unmodified condition of the building materials was chosen specifically to maintain the wilderness aspect of the place while transformed into a built environment.

Spence-Morrow, Giles (University of Toronto), Edward Swenson (University of Toronto) and Aleksa Alaica (University of Toronto)**[99]** *Putting the Body in its Place: The Intersection of Spatial and Corporal Ontologies at the Late Moche Site of Huaca Colorada, Peru*

The Late Moche ceremonial center of Huaca Colorada (A.D. 650–850) was distinguished by cycles of ritualized architectural renovation that coincided with human and animal foundation sacrifices. Detailed architectonic analysis of the construction sequence of the ceremonial core in relation to the sacrificial burials incorporated into the structure itself provides interesting insights on Moche ontologies of embodiment, space, and social change. The data strongly suggest that Moche perceived architecture as an animate, changing, and metabolizing body, the life history of which paralleled the trajectory of different biological entities (human, divine, and environmental). The joint sacrifice of architectural and living beings sheds light on Moche worldview and constructions of identity in Middle Horizon Jequetepeque. Ultimately, an investigation of the maintenance, renovation, and ritual treatment of architecture at Huaca Colorada and other Moche sites offers a means to interpret Moche ideologies of life, death, and vitality.

Spence-Morrow, Giles [105] see Jennings, Justin

Spencer, Kaylee (University of Wisconsin - River Falls) and Maline Werness-Rude (Eastern Connecticut State University)**[27]** *Spatial Arrangements at Chichen Itza*

Site mapping has been a mainstay in the study of archaeological cultures. Following upon the heels of mapping efforts, which have grown increasingly precise as our own technology develops, scholars have studied site, building, and monument orientations to great effect. In the Maya region such investigations have shown how the Maya positioned themselves relative to the cardinal and inter-cardinal directions, natural aspects of the landscape, and/or other parts of the built environment at inter- and intra-site levels. We will build upon such work in looking at Chichen Itza in relation to some of its neighbors. In doing so, we will concentrate on specific plaza and building arrangements that at first glance seem to have skewed orientations or to not be positioned relative to any surrounding areas or constructs. Upon further analysis, however, many of these spaces begin to slowly snap into place. It is only through experiential analysis as well as approaches grounded in behavioral archaeology, combined with an overarching understanding of regional aspects of site layout, that such careful placing is revealed, demonstrating the hitherto under-recognized degree to which the northern builders and master planners created nuanced signals that directed viewers through the charged socio-political spaces they created.

Spiess, Arthur [157] see Betts, Matthew

Spigelman, Matthew [90] see Roberts, Theodore

Spinapolic, Enza (LCHES, Dept. of Archaeology & Anthropology University of Cambridge)

[22] *East African MSA: Regionalisation and Variability*

The Late Pleistocene is a central period in the story of human origin, being associated with the spread of modern humans within and Out of Africa. While fossils and genetics provide the evolutionary setting for the origin of our species, stone tools are often the only archaeological remain attesting of Early Modern Human behavior, and constitute the bulk of the evidence on hominin behavioural variability. East Africa encompasses ~3.6 million km² including a large variety of biomes. Sites are irregularly distributed, largely concentrated within the East African Rift Valley system. The overall site density is low, with a complete lack of coverage for many areas; radiometric dates are few, and caves or other deeply stratified sequences that allow ready observation of change through time are rare. Here we present results of the lithic analysis of MSA sites from Ethiopia (Garba III, Melka Kunture) and West Turkana, Kenya (Kalakol3; Lomanimania), showing analogies and differences at various scales of analysis, evidencing both the coherence in the East African MSA and specific adaptations to the paleoenvironments. The understanding of intra-regional variability is the mandatory step before attempting comparisons at a larger scale, allowing to test models about the different Out of Africa Routes.

Spivey, S. (Washington University in St. Louis)

[290] *Fort Center's Iconographic Bestiary: A Fresh Look at Fort Center's Zoomorphic Wood Carvings*

The zoomorphic wood carvings excavated by William Sears from the mortuary pond at the Fort Center (8GL13) site in South Florida are a chronically understudied assemblage. These artifacts are generally interpreted as totems carved into a single contemporaneous dock structure built above the mortuary pond, later excavated in various states of degradation. I propose a preliminary typology through which to interpret their function. Beyond that, I discuss the form the carvings individually take and the figural referents used as guides to shape the carvings, through which I develop a new iconographic interpretation of the bestiary of animals represented in this assemblage.

Splitstoser, Jeffrey (George Washington University)

[172] *Color, Structure, and Meaning in Middle Horizon Khipus*

Inka khipus used cord color, knots, cord attachment, final twist, and sometimes material (e.g., colored camelid hair) to encode information. Middle Horizon (Wari) khipus used all these conventions and more. For instance, the thick, white, cotton pendant cords of MH khipus were routinely wrapped with brightly colored (usually camelid hair) yarns that most likely conveyed meaning. The thickness and structure of pendant-cords themselves likely held significance. Further, while Wari khipu makers tied knots in pendant cords, they sometimes also wrapped these knots with multicolored camelid hair yarns. These practices and others make Middle Horizon khipus far more complex than their Inka counterparts. Based on a detailed study of four Middle Horizon khipu in the collections of the American Museum of Natural History in New York and two khipu that were recently excavated by Miłosz Giersz from the site of El Castillo de Huarmey, this talk will discuss how MH khipus differ from Inka khipus, and it will present patterns found in their color, structure, cord attachment, and twist. The talk will consider the way these patterns and attributes might have been used to encode information.

Spyrou, Maria A. [223] see Krause, Johannes

Squires, Kirsty (Staffordshire University)

[25] *Changing with the Times: An Exploration of Shifting Attitudes and Funerary Treatment of Children from the Roman to Early Medieval Period in Britain*

Throughout Britain, archaeological cemeteries and settlements are being increasingly subjected to in-depth site analyses. Large scale excavations and subsequent post-excavation work result in large bodies of osteological and artefactual data which, in turn, allow archaeologists to glean an insight into the social identity of past populations. Biocultural studies that specifically focus on the treatment and attitudes towards children living in Romano-Britain (first–fifth century A.D.) and early Anglo-Saxon England (fifth–seventh century A.D.) are no exception. However, this type of research tends to focus on sites that date to the same period, meaning that changes to the treatment and attitudes towards children from the Roman to early Anglo-Saxon period are largely unexplored. Through an examination of the burial record and documentary sources, this paper will consider how attitudes towards children changed from the first to early seventh century A.D. This will be achieved through an exploration of three key areas, namely the demographic nature of sites, artefactual assemblages interred with the dead, and placement of children in the funerary landscape. It is hoped that this research will highlight the value of conducting multi-period studies as a means of understanding how attitudes and treatment of children changed over time.

St. Amand, Ani (University of Maine Climate Change Institute), Dan Sandweiss (University of Maine Department of Anthropology) and Alice Kelley (University of Maine School of Earth & Climate Stud)

[90] *Impacts of Population Resettlement Due to Sea Level Rise on Archaeological Resources: A Case Study*

Coastal communities in the United States, as well as other portions of the world, are contending with challenges posed by sea level rise. As coastal areas are inundated and subjected to coastal processes, action is generally limited to mitigation of sites with great local significance experiencing immediate threat, while the destruction of archaeological sites by the resettlement of affected communities has been given little attention. This secondary impact of climate change threatens cultural resources outside of the immediate zone of flooding and erosion. It is imperative for archaeologists to work with climate scientists, urban planners, communities, and government officials alike to identify and protect these sites and to increase stewardship of our archaeological heritage. Here, we report a pilot study in Casco Bay, Maine, using archaeological survey data, accurate digital elevation models, local sea level rise projections, current settlement patterns, and settlement logistics data to predict potential impact to archaeological resources above the immediate impact zone through landward relocation of infrastructure. This project lays the groundwork for communities to mitigate secondary threats by identifying where populations are likely to expand based on existing infrastructure and resettlement patterns, and by articulating which archaeological sites will likely be negatively impacted.

Stack, Adam (Harvard University) and Matt Liebmann (Harvard University)

[18] *Religious Conversion and Social Networks in Seventeenth-Century New Mexico: A Case Study from Pecos Pueblo*

The religious conversion of Native North Americans was a fundamental goal of European colonizers in the sixteenth and seventeenth centuries. Native experiences of missionization have often been framed within a concept of religious conversion as ontological transformation that descends from Christian doctrine. Many Native 'converts' doubtless eluded encounters with the transcendent leading to fundamental inner change, and archaeologists have often been frustrated in the search for convincing evidence of such a phenomenon. What utility does the notion of conversion have for understanding Native experiences of evangelization? Should it be discarded, as some anthropologists have claimed? Or do more recent perspectives on conversion give new insights into religious and social transformations in Native individuals and communities? We examine how shifting away from psychological models towards an emphasis on social explanations offers useful ways to consider past religious change in the Native New World. Using new data from northern New Mexico, we investigate the relationship between conversion and social networks in the early historic U.S. southwest.

Stahl, Ann (University of Victoria) and Amanda Logan (Northwestern University)**[177]** *Scaling Food Practices: Contextual Comparison of Animal and Plant Remains from Banda, Ghana, during the Early Atlantic Era*

In this paper, we examine food practices in Banda, Ghana, during the tumultuous fifteenth to seventeenth centuries A.D., as global scale political economic shifts collided with local economies. In Banda, significant involvement in northward-looking Niger trade began to erode as attention shifted towards emerging Atlantic networks. At the same time, paleoenvironmental records indicate a severe, multi-century drought. How did people negotiate these pressures in their everyday food practices? To address this question, we compare faunal and floral remains from four structures and two midden sequences across two major sites in the region—Ngre Kataa and Kuulo Kataa. We turn special attention to patterning at multiple scales—between sites, structures, and middens—to coax out the localized strategies people used to deal with major economic and environmental change.

Stal, Cornelis [121] see Verlee, Jotka

Staller, John (The Field Museum)**[255]** *Andean Foodways: Interdisciplinary Approaches to Precolumbian and Colonial Food and Culture*

Precolumbian Andean cultures have strong cultural and religious ties to plants and animals in their surrounding landscape. The preparation of food crops and cultigens that sustained life had strong cultural associations to ethnic identity, ritual, and religious practices in the annual cycle. Archaeologists have documented the biological complexity of the Andes and the social importance of feasting, rituals and rites in ancient and colonial societies. Indigenous perceptions and beliefs regarding the natural world were modified by the Spanish conquest and introduction of foreign plants and animals. Contributors explore the roles of food and their cultivation to the political economy and modification of the landscapes and how certain cuisines played a role in ethnic identity, and how specific foods and cuisines were culturally perceived as well as their role in trade networks and social complexity. Archaeological research underscores and emphasizes the importance of foodways and why, how, and when certain plants and animals were consumed in the annual cycle. Contributions to the present session explore and analyze these topics in the context of precolumbian and historic Andean culture, with examples of how domesticates, cuisines, their preparations and basic ingredients influence precolumbian foodways and regional tastes after the conquest throughout the world.

Stamps, Lucas [285] see Wilson, Jeremy

Stanchly, Norbert [235] see Powis, Terry

Stanish, Charles (Cotsen Institute, UCLA)**[12]** *Discussant***Stanko, Tara (East Carolina University) and Megan Perry (East Carolina University)****[199]** *Entheseal Changes as a Reflection of Activity Patterns at 1st Century B.C./A.D. Petra*

The residents of the Nabataean capital city of Petra (Jordan) remain an enigmatic element of Near Eastern history. Most research has focused on the site's architecture rather than the inhabitants living amongst the city's spectacular structures. Excavations of first century B.C./A.D. tombs from Petra's North Ridge in 2012 and 2014 recovered a sizeable sample (N=113) of Petra's non-elite inhabitants. This project explores entheses to understand physical activity levels and patterns within this sample. Entheses are insertion sites where tendons and ligaments anchor to bone, providing stability and support for musculoskeletal movement. New methods for scoring enthesal changes have served to advance the application of this technique to understand ancient activity. The Coimbra method, which is largely based on clinical evidence of entheses, was used to document enthesal changes in this segment of Petra's population. Samples from a Nabataean-Roman community in Syria, a 9th century Great Moravia village, 19th century non-industrialized Holland, and a twentieth and twenty-first century U.S. sample served as comparisons for physical activity levels. Results found the Petra sample to have similar activity patterns as non-industrialized settled populations. These physical activity patterns offer a new perspective on the socioeconomic aspects of the non-elite Nabataeans of Petra.

Stanley, Andrea [66] see Swarts, Kelly

Starbard, Robert [266] see Hollinger, Eric

Stark, Miriam, David Brotherson (University of Sydney), Damian Evans (École française d'Extrême-Orient) and Martin Polkinghorne (Flinders University)**[74]** *Angkorian Collapse and Aftermath: A View from the Center*

The ninth–fifteenth century Angkorian state was southeast Asia's largest ancient polity; its 1000 km² core was among the world's largest preindustrial urban centers. The Angkorian state's mid-fifteenth century C.E. "collapse" moved the polity's rulers and their populations south to a series of new capitals that were closely linked to the Early Modern Southeast Asian economy. Angkor as a capital collapsed, but the Angkorian civilization continued. We use field

excavations, surface survey, and remote sensing research through the Greater Angkor Project to examine the archaeology of collapse at Angkor, and to offer local perspectives on state collapse for comparative research.

[178] *Discussant*

Stark, Barbara (Arizona State Univ)

[216] *Gulf Lowland Collapse*

In south-central and southern Veracruz settlement pattern data document a collapse of previous settlement systems and many cultural traditions. Some regions reorganized and some likely were re-populated in part by migrants from highland regions. The timings of collapse in these lowland regions are poorly defined, but variation seems likely. Causes have received little attention because the extent of changes has not been recognized. Likewise, possible consequences are still to be investigated. Both causes and consequences are preliminarily identified as well as future courses of action that will help understand these developments.

Stauffer, Sara (Manti-La Sal National Forest) and Lindsay Johansson (University of Colorado Boulder)

[104] *Where's the Party? An Investigation of Communal Feasting among the Fremont*

The Fremont people were socially complex and lived within various sized communities. As with any community there are mechanisms used to either differentiate among members of the community or to integrate members of the community and beyond. One of these mechanisms is feasting. In this paper we present evidence from several large village sites across the Fremont region that suggests that the practice of feasting was utilized. In many cases, evidence for feasting is associated with structures that may have been ritually important.

Stauffer, John

[164] *Elucidating Fort Walton in Florida: Chronology and Mound Construction at the Lake Jackson Site*

Along the periphery of the Mississippian Art and Ceremonial Complex, the Lake Jackson site existed as a multi-mound ceremonial center whose material contents included objects bearing widespread symbols connected with complex traditions in the long-lived history of Native American iconography and ceremonialism. This paper investigates the occupation chronology of the site through an analysis of its ceramic assemblage and artifact proveniences with a particular focus on Mound 5, a stratigraphically complex platform mound feature. Through the application of Accelerated Mass Spectrometry dating, stratigraphic analysis, and ceramic analysis, this presentation offers tentative explanations for the onset of Mississippian ceremonial behavior at the site and its temporal placement within the late prehistoric duration of the Fort Walton archaeological culture.

Stavast, Paul [39] see Lambert, Stephanie

Steadman, David, Janet Franklin, Jim Mead, Angel Soto-Centeno and Nancy Albury

[222] *Natural vs. Human-caused Extinctions of Terrestrial Vertebrates in the Bahamas*

We report 83 taxa of vertebrates (11 reptiles, 63 birds, 9 mammals) from late Pleistocene bone deposits in Sawmill Sink, Abaco, The Bahamas. These bones were recovered by scuba divers in non-cultural contexts at water depths of 27–35 m. Among the 83 species, 40 (48 percent) no longer occur on Abaco (4 reptiles, 31 birds, 5 mammals). We estimate that 17 of the 40 losses (all of them birds) are linked to changes during the Pleistocene-Holocene Transition (~15 to 9 ka) in climate (becoming more warm and moist), habitat (expansion of broadleaf forest at the expense of pine woodland), sea level (rising from -80 m to nearly modern levels), and island area (going from ~10,000 km² to 1214 km²). The remaining 23 losses took place in the late Holocene, and are related to the human presence on Abaco for the past 1,000 years. Based on the evidence in hand, the arrival of people on a Bahamian island leads to more faunal depletion than the dramatic physical and biological changes associated with the last glacial-interglacial transition.

Steele, Laura (Eastern New Mexico University)

[67] *The Role of Rare Animals During the Pueblo IV Period: Evidence of Ritual at Sapa'owineh (LA 306)*

Examining the relationships between humans and animals during the Classic period contributes to our understanding of life in the Northern Rio Grande region and the larger Pueblo world. Utilizing ethno-historic and archaeological evidence for the use of mammalian and avian fauna, this poster demonstrates the significance of rare animals from midden, room, and kiva contexts from the ancestral Tewa site Sapa'owineh (LA 306). Ritual fauna in the Southwest were often carnivores and birds. Species at Sapa'owineh documented as ritually important in the ethno-historic record of the Southwest included: bear, wolf, beaver, golden and bald eagles, a semi-articulated red-tailed hawk skeleton, a semi-articulated badger skeleton, as well as several articulated and semi-articulated turkey skeletons. By studying faunal remains and comparing the data to the ethno-historic record, archaeologists have the ability to elucidate both complex and subtle ritual behaviors not readily seen through the analysis of other materials alone.

Steele, Teresa [80] see Goldfield, Anna

Steele, Teresa (UC Davis), Esteban Álvarez-Fernández (Universidad de Salamanca), Emily Hallett-Desguez (Arizona State University), Mohamed El-Hajraoui (Institut National des Sciences de l'Archéologie et) and Harold Dibble (University of Pennsylvania)

[177] *Coastal Marine Resource Exploitation during the Late Pleistocene at Contrebandiers Cave (Temara, Morocco)*

Increasingly, researchers have considered the role of coastal marine resource exploitation in influencing the trajectory of human behavioral and biological evolution, specifically relating to modern human origins. However, these models have focused almost exclusively on the relatively rich and well-documented record from the Middle Stone Age (MSA) of coastal South Africa. Here, we present data on coastal marine resource exploitation during the Late Pleistocene at Contrebandiers Cave [La Grotte des Contrebandiers, Smugglers' Cave] (Temara, Morocco). Contrebandiers' sequence includes the MSA, which spans ~126,000–95,000 years ago at the site, and the Iberomaurusian, which elsewhere is ~18,000–11,000 years ago. Today the site is only 270 m from the Atlantic shore; during the MSA and Iberomaurusian, inhabitants appeared to have had consistent access to a nearby rocky coast, where they gathered mainly limpets, mussels, and marine snails for subsistence. However, the relative proportions and sizes vary meaningfully through the sequence. The Contrebandiers occupants also collected shells for non-dietary reasons, including triton and tick (mostly Nassarius) shells. Some marine

birds, fish, crabs, goose barnacles, and sea urchins are also preserved; no seal bones are present. In sum, when at the coast, marine resource exploitation was a typical component of MSA adaptations.

Steelman, Karen (University of Central Arkansas) and Carolyn Boyd (Shumla Archaeological Research & Education Center)

[131] *Two Independent Methods for Dating Rock Art: Age Determination of Paint and Oxalate Layers at Eagle Cave, TX*

Using two independent methods, we provide reliable age estimates for three Pecos River Style figures at Eagle Cave in Langtry, TX. To obtain direct dates for the paintings, we employed plasma oxidation of the organic binders in the paint layer followed by accelerator mass spectrometry. For minimum and maximum ages, we acid treated the overlying and underneath accretion layers to isolate calcium oxalate for combustion and ^{14}C measurement. The radiocarbon dates for the three paint samples are statistically indistinguishable, with a weighted average of 3280 ± 70 years B.P. calibrated to 1740–1420 cal B.C. at 2 sigma (95.4 percent probability). Overlying accretion layers are younger and underlying accretion layers are older. This correctly ordered, chronological stratigraphy of the accretion and paint layers supports the validity of both dating methods. As new high-resolution excavations are underway at Eagle Cave, the rock paintings can now be studied alongside excavated cultural deposits to provide a more complete understanding of this hunter-gather society.

Steelman, Karen [230] see Russ, Jon

Steere, Benjamin (Western Carolina University)

[137] *Mississippian Communities and Households from a Bird's-Eye View*

In the twenty years since the publication of *Mississippian Communities and Households*, improvements in GIS and database software have enabled archaeologists to analyze and compare the material remains of past communities and households at spatial scales that were once infeasible. In this paper I use a database of over 1,200 Native American structures from 65 sites across the Southeast to compare changes in the architecture of Mississippian houses and settlements at a broader temporal and spatial scale than might have been possible in the mid-1990s. This bird's-eye view provides useful insights about the relationship between changes in architecture and changes in communities. Using a theoretical framework developed from classic studies in household archaeology and anthropology, I argue that certain aspects of architectural variation in Mississippian communities made visible at a broad spatial scale can be explained by changes in household economics and household composition, symbolic behavior, status differentiation, and settlement patterning.

Steffen, Anastasia [66] see Worman, F. Scott

Steffen, Martina (University of Arizona, School of Anthropology)

[148] *Faunal Assemblages from Archaeological Levels at the Croxton Site in Alaska*

Caribou (*Rangifer tarandus*) are often abundant in faunal assemblages from archaeological sites in arctic, sub-arctic, and alpine tundra areas of the Northern Hemisphere. Archaeological faunal assemblages from interior Alaska include prime examples. This poster focuses on the interpretation of a new sample of vertebrate faunal remains from the Croxton site located along the shore of Tukuto Lake on the north slope of the Brooks Range in which caribou dominate. Analyses compare faunal assemblages from archaeological levels that may link with the previously established culture historical sequence at the site that includes Ipiutak and Denbigh components. Caribou selection and processing are assessed and faunal part frequencies are analyzed with utility indices for this species developed at Anaktuvuk Pass among the Nunamiut.

Stein, Gil (University of Chicago)

[12] *The Origins of Social Complexity in Chalcolithic Northern Mesopotamia: Excavations at Surezha*

Although much scholarship has focused on the emergence of towns and cities in southern Mesopotamia, archaeologists still know very little about comparable developments in northern Mesopotamia and especially Iraqi Kurdistan, due to the rarity of archaeological fieldwork in those regions until recently. The excavation project based at Surezha on the Erbil plain aims to contribute to our understanding of Chalcolithic northern Mesopotamia and illuminate the development of social complexity in the region, as well as study its relationship with Ubaid and Late Chalcolithic southern Mesopotamia. Excavation results from Surezha thus far have included the documentation of a sequence of Late Chalcolithic levels, furnishing new information on 5/4th millennium developments on the Erbil plain

Steinbrenner, Larry (Red Deer College)

[163] *"Nicoya Polychromes" Beyond Greater Nicoya*

In the mid-20th century, Doris Stone described Las Vegas Polychrome, a brightly coloured ceramic ware found at sites in Honduras' eastern highlands and the Comayagua Valley, as being "strongly reminiscent of western Nicaragua and the Nicoya Peninsula in Costa Rica." Meanwhile, contemporary archaeologists were happily classifying near-identical ceramics from eastern El Salvador as "Nicoya Polychromes". More than a half century later, Las Vegas Polychrome remains only nominally defined, examples from El Salvador continue to be mistakenly viewed as imports from Nicaragua or Costa Rica, and the potential connections of both groups of ceramics to the comparatively better-known pottery of Greater Nicoya remain almost completely unexplored. This presentation will focus on some of the remarkable similarities between Las Vegas Polychrome and analogous ceramic types from Nicaragua and outline some of the most pressing unanswered questions concerning the ware, such as the potential significance of its presence along trade routes connecting Mesoamerica and Lower Central America and the mechanisms that might have contributed to the Early Postclassic production of roughly analogous ceramic types across a region that now spans four different modern countries in Central America.

Steinwachs, Erin [112] see Nolan, Kevin

Stelle, Lenville (Illinois State Archaeological Survey)

[131] *Chair*

Stelten, Ruud [220] see Haviser, Jay

Stemp, W. James (Keene State College)

[214] *Blind-Testing, Post-Depositional Damage, and Lithic Microwear: Results of Qualitative and Quantitative Analyses Using Optical Microscopy and Laser Scanning Confocal Microscopy*

The increasing adoption of approaches to lithic microwear analysis based on metrology and tribology by archaeologists has provided opportunities to revisit unresolved issues associated with microwear method, such as wear formation processes, the exclusivity of polishes derived from different worked materials, and, as presented in this paper, post-depositional damage and the accuracy and reliability of microwear analysis. In this paper, we discuss the results of blind-tests performed on chipped stone flakes made from obsidian, chert, and flint using traditional optical microscopy and laser scanning confocal microscopy (LSCM). The stone tools were produced and used by one researcher, deposited in a soil matrix for six months to replicate post-depositional conditions, and then independently analyzed by the other using a metallurgical microscope and the LSCM. Recommendations are made with regard to: 1) the design and execution of blind tests for lithic microwear analysis, 2) the distinction of use-related wear from other surface damage, and 3) the potential benefits of applying a dual method approach that relies on traditional visual analysis and the quantification of surface wear.

[214] *Chair*

Stenborg, Per

[263] *Predicting the Past: Remote Sensing Data as a Tool for Locating Archaeological Settlements in the Amazon*

The potentials of using analysis of remote sensing data (particularly Lidar data) as a method of predicting the presence of archaeological sites in densely forested areas are discussed in this paper. The case study deals with an inland area—the Belterra Plateau—situated south of Santarém in the State of Pará, Brazil. Recent fieldwork has suggested that late pre-Columbian settlements generally are found in the surroundings particular geological features and in this region. Drawing on the results of this archaeological fieldwork a tentative interpretation of remote sensing data from an area further south; originally collected for environmental preservation purposes, is attempted.

Stephen, Jesse (University of Hawaii at Manoa)

[227] *Sensory Exploitation, Monumentality, and Social Stratification: A Multisensory Survey of Pu'ukoholā Heiau, Hawai'i*

Monumental architecture is often theorized as a costly signal in prehistoric complex societies, including Oceania in general and Hawai'i in specific. In this paper I explore sensory exploitation theory, which suggests that the costliness of monumentality may have contributed to social stratification and the multifaceted function of religion through specific sensory sensitivities. Pu'ukoholā heiau, a large temple on the Big Island of Hawai'i with notable archaeological, historic, and contemporary circumstances, is presented as a case study for a multisensory investigation of how the senses, monumentality, and social stratification may be more intertwined than previously described.

[227] *Chair*

Stephens, Douglas (US Forest Service)

[165] *Research, Relevance and Resources: Academic Partners on National Forests*

Since the establishment of the US Forest Service in 1905 academic partnerships have been essential to the management and understanding of the cultural resources the agency oversees. After the National Historic Preservation Act was passed in 1966 the Forest Service gradually began developing its own program to manage cultural resources changing the relationship between the agency and researchers. This paper explores the changing ways academic research has influenced the Forest Service and how public lands research has perhaps influenced academia.

[165] *Discussant*

Stephenson, Keith (USC Institute of Archaeology and Anthropology) and Karen Smith (USC Institute of Archaeology and Anthropology)

[98] *Regional Analysis of the Middle Woodland Deptford Period on the South Atlantic Slope*

Middle Woodland sites of the Deptford Period on the Atlantic Coastal Plain first received archaeological attention during the Great Depression. Aspects of Deptford settlement organization and its socio-political economies have been debated ever since. Models developed for interior-riverine sites in the Coastal Plain indicate that occupation differed between floodplain sites and those of the upland, inter-fluvial areas. Two extensive blocks with Deptford components were excavated at the Savannah River Site: the G.S. Lewis West site on the floodplain and 38AK155 in the uplands. Comparative analysis indicates differences in large-scale storage, mortuary behavior, complex pottery designs, craft specialization, and long-distance exchange.

[98] *Chair*

Steponaitis, Vincas (UNC-Chapel Hill), Lynne Goldstein (Michigan State University), Keith Kintigh (Arizona State University) and William Lovis (Michigan State University)

[30] *A Brief and True History of SAA's Involvement with NAGPRA*

SAA was heavily involved in NAGPRA's passage, and played a key role in shaping the compromises embodied in this law. The Society's positions with respect to the many repatriation bills considered by Congress were conditioned by SAA's "Statement Concerning the Treatment of Human Remains," a policy adopted in 1986. SAA strongly and actively supported the final bill precisely because it conformed closely, albeit not perfectly, to the principles articulated in this statement. The policy was also consistently applied in determining SAA's responses to the many regulatory and legislative issues that arose during the first two decades after the law was passed.

[261] *Discussant*

Sterling, Kathleen (Binghamton University)

[5] *Discussant*

Sterling, Stephanie (University of Nebraska-Lincoln), Heather Richards-Rissetto (University of Nebraska-Lincoln) and Rene Viel (Asociacion

Copan)

[237] *Past Meets Future: Combining GIS, 3D Technologies, and Legacy Data to Reanalyze Ceramics at Copan, Honduras*

The archaeological site of Copán—a UNESCO World Heritage Site in Honduras—was a primary center for cultural and economic exchange in the Maya world from the fifth to ninth centuries. Our research investigates the sociopolitical climate of the city immediately preceding this collapse. This poster presents the results of a pilot study intended to evaluate the potential of using a combination of digital technologies and legacy data to reanalyze a subset of diagnostic ceramics from select sites outside of Copan's urban core. Our methods involved:

- (1) Applying photogrammetry to generate 3D models for approximately 30 potentially temporally-diagnostic ceramic types
- (2) Digitizing, collating, and analyzing legacy data on ceramics from archived field reports at the Centro Regional de Investigaciones Arqueológicas (CRIA) in Copan Ruinas, Honduras
- (3) Linking the legacy data to a Geographic Information Systems (GIS) to identify a subset of sites with greater likelihood to contain diagnostic sherds outside of the main ceremonial complex
- (4) Reanalyzing a subset of sherds from 1980s test excavations

Initial results indicate that integrating digital technologies and legacy data is conducive to our research efforts. Our results are presented in a multi-media format that encourages viewer interaction with 3D models and Augmented Reality.

Sternberg, Evan (Office of Contract Archeology, UNM), Justin Lowry (Department of Sociology and Anthropology, George M) and Jason Paling (Social Science Department, Plymouth State University)

[234] *Trade and Inter-Community Networks Around Managua, Nicaragua*

Trade and inter-community connections are keys to understanding how the ancient region around the modern city of Managua, Nicaragua, interacted and participated in the larger Central American and Mesoamerican trade corridor. This poster will present potential interpretations of long distance and local connections through a cost and pathway analysis using ArcGIS. This study will incorporate recent research on obsidian sources from the site of Chiquilistagua into the model of interactions, as well as an analysis of ceramic spheres. Adapting site catchment areas, using trade and pathway data, and incorporating sourcing analyses we can help to identify potential connections between sites and regions. These models may then be tested in future excavations around Managua, Nicaragua, to evaluate their utility.

Sternner-Miller, Katherine (University of Wisconsin-Milwaukee) and Robert Jeske (University of Wisconsin-Milwaukee)

[232] *A Scraper is Sometimes Just a Scraper: A Multi-Method Approach to Inferring Tool Use at an Oneota Site in Southeastern Wisconsin*

A sample of lithic artifacts from the Crescent Bay Hunt Club site, a twelfth–fourteenth century Oneota village at Lake Koshkonong in southeastern Wisconsin, were subjected to a multiple-method analysis to determine individual tool use. In this example, an assemblage based analysis of raw material type and quality, heat alteration and energy input into manufacturing combined with debitage analysis provides an overall understanding of the lithic economy. Triangular bifaces and unifacial tools from Crescent Bay were then subjected to a combination of micro- and macroscopic identification of edge damage and surface polishes, followed by protein residue analysis to provide four independent lines of evidence that yield strong inferences about tool use. This multi-pronged approach to raw material acquisition, tool manufacturing, tool use, and tool discard provides more comprehensive insights into the role of lithic economy in the daily lives of people than are often derived from Late Prehistoric sites in the Midcontinent.

[232] *Chair*

Stevens, Karen

[8] *Auditory Exostoses as Indicators of Mobility and Sexual Divisions of Labor in the Green River Valley, Kentucky*

Auditory Exostoses (AEs), commonly called "surfer's ear," are benign bony swellings in the external auditory canal and most often occur due to regular exposure of the ear to cold water and wind. Some of the highest frequencies of AEs encountered are found in Archaic Period populations of the Green River Valley, Kentucky. Previous measurements of sample populations have shown a range of 12.6 to 34.9 percent of adults with one or more AE, with even higher percentages existing among the male sub-population (e.g., up to 54.3 percent at Indian Knoll; Mensforth 2005). Taking a clinical approach to the measurement of AEs, several Archaic skeletal populations from the Green River Valley were analyzed for the presence and severity of these bony growths. Results are discussed with respect to assumptions about mobility and flux among sites located on the Green River and its tributaries, sexual divisions of labor, and water-related subsistence practices.

Stevens, Chris [177] see Winchell, Frank

Stevens, Michelle

[267] *Circling the Wagons for the Santa Fe National Historic Trail - Partnering for Preservation*

Since its designation as a National Historic Trail in 1987, partnerships between government agencies, preservation organizations, contractors, local communities, and individuals have been essential for identifying, marking, preserving, protecting physical traces and historical landscapes as well as, recognizing, interpreting, and promoting research and recreation along the Santa Fe National Historic Trail. In southwest Kansas and southeast Colorado, these diverse partnerships have been instrumental in listing many trail segments on the National Register, conducting landscape scale viewshed analyses, identifying protective corridors, connecting landowners and the public to this nationally significant resource, and encouraging them to become active stewards. While these efforts help ensure future trail preservation, they have not been without controversy. Collaborating and engaging partners and responding to concerns of non-partners often required cultural awareness and political savvy to address controversial issues and increase the effectiveness of Santa Fe Trail management throughout the region.

Stevenson, Christopher [36] see Gunter, Madeleine

Steves, Laurie M. [78] see Nichols, Kristi Miller

Stewart, Haeden (University of Chicago) and Jason De Leon (University of Michigan)

[128] *"Clean Up Your Mess, Chino": Contested Space, Boredom, and Vulnerability among Central American Migrants Crossing Southern Mexico.*

The growing subdiscipline of archaeology of the contemporary has stressed the importance of studying detritus to access silenced or abject aspects of the recent past. This paper takes a different approach, focusing on the ways that an archaeology of the present is not about uncovering "truths" that correct ethnographic research, but is rather a constant agitation and addition to ethnographic engagement. Following recent American pressure on the government of Mexico and changes in Mexican immigration enforcement strategies, the experience of undocumented Central Americans migrating through Mexico has transformed drastically over the past year. The social process of undocumented migration is now defined by long periods of waiting in vulnerable and marginalized spaces. Drawing on recent fieldwork with Honduran migrants in Southern Mexico, this paper argues for the necessity of a combination of ethnographic and archaeological techniques and sensibilities to study how boredom, uncertainty and vulnerability are experienced and dealt with by migrants staying in these marginal spaces. Combining day-to-day ethnography with a systematic mapping of material culture and migrant activity in Pakal-Na, Chiapas, we show how the use and reuse of 'trash', as well as the use and re-appropriation of 'trash-filled' spaces, defines how migrants wait and deal with boredom.

Stewart, Marissa (Ohio State University), Francesco Coschino (Division of Paleopathology, University of Pisa), Antonio Fornaciari (Division of Paleopathology, University of Pisa) and Giuseppe Vercellotti (Ohio State University)

[147] *Advanced GIS Applications for Bioarchaeology: Methods and Case Studies*

New computer technologies have become indispensable components in Human Sciences. Archaeology has a long history of adopting and using these technologies to document the site and the excavation process, to record the location of excavated artifacts and materials, and to assist in interpretations and analysis of the excavation and recovered finds. However, despite the constant and ever-developing applications in archaeology, the specialization of bioarchaeology has not yet developed unique standards to fully benefit from these new technologies. This poster is intended to demonstrate the benefits of these digital protocols with bioarchaeological case studies. In particular, it will show the experimental results of an extensive GIS (Geographic Information Systems) survey obtained within two diachronous cemeteries in Tuscany (Italy): the monastery of Badia Pozzeveri (X–XIX centuries) and the castle of Benabbio (XIII–XIX centuries). Additionally, this research proposes new protocols for surveying, managing and processing data produced during an archaeo-anthropological excavation and how that can be beneficial in the initial recovery and study of osteological material. It will present the potential applications of open source GIS, three-dimensional photogrammetric processing and the fusion of these two techniques for the creation of 4D analysis platforms.

Stewart, R. Michael [153] see Rankin, Jennifer

Stewart, Christina (Petrified Forest National Park)

[268] *Understanding the Relationship Between Sample Size and Variation in Ceramic Relative Chronologies at the Petrified Forest National Park*

Petrified Forest National Park contains an extensive prehistoric ceramic variability, exhibiting ceramics from multiple regions at later prehistoric sites. Like much of the Southwest, most of the research at the park is survey oriented, recording only a sample of ceramics on site. The high diversity of ceramics and small sample sizes has the potential to create a recording bias when using ceramics to relatively date sites. This project investigates the relationship between site diversity and sample. To analyze this a large ceramic sample will be recorded from three well dated Pueblo III sites within the park. From these three larger samples smaller random data subsets will be dated to see the range of ceramic relative dating within each sample size. This understanding will help the park to better relatively date newly recorded sites and thus shed light on the larger issue of how relative chronologies are impacted by sample size.

Stitt, Rebecca

[246] *Defining Boundaries: An Investigation of Boynton Mounds (8PB100)*

In fall of 2013 preparations began for a limited study of the Boynton Mounds (8PB100) archaeological site. This group of earthwork lies nestled between the Okeechobee basin and East Okeechobee areas in central Palm Beach County Florida. Investigations aim to reveal similarities and dissimilarities between the two areas, which, in turn, may lead to a better understanding of regional variation in South Florida. The primary objective of this study is to identify which culture region Boynton Mounds is most similar to across time, the East Okeechobee or the Okeechobee basin culture areas.

Stoellner, Thomas [223] see Warinner, Christina

Stokely, Sarah [210] see Adler, Rachel

Stoll, Marijke (University of Arizona)

[27] *Playing for Power: Ballcourts, Political Negotiation and Community Organization in Postclassic Nejapa, Oaxaca, Mexico*

In the politically dynamic Postclassic period (AD 1000-1521), multiple ballcourts were built in different communities throughout the Nejapa region of Oaxaca during a time of significant settlement shifts and pressure from expanding Zapotec and Aztec empires. As a specially marked category of public architecture, ballcourts would have distinguished communities from each other while also serving as socially-integrative locations through hosting games and other important ritual activities. Given the dramatic changes in the sociopolitical landscape in Nejapa, and its position as both an important stop on an interregional trade route and a multiethnic boundary zone, successfully negotiating conflict and social integration among and between communities would have been especially important. How ballcourts are distributed within the social landscape is therefore significant—where a ballcourt was emplaced within public space would have expressed not only particular underlying social, political, and symbolic meanings, but also the centrality of the ballgame to political and daily life. This presentation examines where ballcourts are placed within sites and their distribution on the landscape in order to evaluate the role of the ballgame in adjusting to and negotiating a shifting sociopolitical landscape for both local elites and different communities in Nejapa.

Stone, Peter (Virginia Commonwealth University)

[51] *Lagging, Uneven Hellenism in the Hellenistic East*

Alexander the Great's conquest of the Persian Empire ushered in the Hellenistic period, so called because of the ostensible spread of Greek culture across a vast landscape. Such a characterization is supported by the presence of Greek inscriptions and Greek style art and architecture at cities founded by Alexander and his successors. But this picture becomes complicated the further one moves from the centers of power. I Maccabees, an account of a Jewish revolt against the Seleucid dynasty written in the late 2nd century BCE, bemoans a rash of Hellenism in Jerusalem that manifested not in the immediate wake of Alexander's conquest when we might expect culture shock to be most severe, but in the 170s BCE. The archaeological record from the southern Levant provides some context for this unexpected framing of the era. Many of the "Hellenic" hallmarks of the Hellenistic world: including Greek inscriptions, iconography, and elaborate table settings and décor only became popular in the southern Levant in the 2nd century BCE. This paper draws upon the material record to show how this newly available cultural currency had different purchase among groups whose histories had been shaped by centuries of imperialism in the region: Phoenicians and Jews.

Stone, Anne C [160] see Nieves Colón, Maria

Stone, Jessica (University of Oregon)

[160] *Ghost of the Navigator: Tracking Initial Human Population Dispersal to the Palauan Archipelago*

While Micronesia was one of the last geographical areas to be colonized by humans prehistorically, the timing, direction, and origins of initial settlement in many ways still remains unclear. The Chelechol ra Orrak site in Palau, which contains the oldest known human remains in Micronesia, (dating back to at least 2800 B.P.)—and that is one of only two burial sites in the Pacific Islands to pre-date 2500 B.P.—provides an excellent opportunity for direct study of population dispersals into the region via ancient DNA (aDNA). Initial results from pilot studies using material from Chelechol ra Orrak have yielded results that appear consistent with an origin in Island Southeast Asia. This paper investigates the feasibility of aDNA analysis using newly collected data from three additional burial locations in Palau (Ucheliungs, the Koror Quarry site, and Omedokel), which were added to a new suite of samples collected in situ from Chelechol ra Orrak last field season. Our results are providing a better understanding of early population relationships and genetic diversity throughout the archipelago and helping to refine population origins for both Palau and western Micronesia.

[160] *Chair*

Stone, Rebecca (Emory University)

[172] *"Color and Q'iwa: Expecting the Unexpected in Andean Textile Design"*

Color is one of many key expressive modes for textiles in particular. Intense, communicative, and not always predictable, Andean textile coloration is a complex issue. Rather than submitting to a "cookbook" delineation of color symbolism (red means blood, etc.), the abstract mindset of ancient and modern Andean societies means that color has many more complex, even philosophical, roles to play in the fiber arts of this area. For instance, purposeful rupturing of regular color patterning occurs in various styles, from Paracas embroideries to Wari, Chimú, and Inka imperial tapestries. A characteristic late Andean pattern is to break the pattern via color deviations and outright anomalies. The Quechua word applicable to this phenomenon, q'iwa, comes from music, meaning the intentional off-note. Why the Andean state styles embraced the idea of a wildcard element is the subject of this paper. Political, spiritual, and purely technical considerations enter into accounting for the Andean predilection for irregularity as a component of orderliness. A relationship between chaos theory and Wari color q'iwās will be suggested, proposing that possibly divination was used to introduce irregularity into otherwise predictable design.

Stoner, Wesley [57] see Lazzari, Marisa

Storey, Rebecca (University of Houston)

[129] *Chair*

Storey, Rebecca [129] see Buckley, Gina

Storozum, Michael (Washington University in Saint Louis), Tristram Kidder (Washington University in Saint Louis), Zhen Qin (Washington University in Saint Louis) and Haiwang Liu (Henan Provincial Institute of Cultural Relics)

[120] *The Central Plains Archaeological Survey: A Preliminary Report*

Over the past five years, the authors have conducted a geoarchaeological survey in Northern Henan Province, China, to test three hypotheses of regional and global significance. First, many Chinese archaeologists consider this area void of archaeological remains. Based on our data, most archaeological material is far below the surface - approximately 5 to 8 meters. Second, the location of the Yellow River during the Bronze Age year is argued to flow to the south, entering the ocean near Shanghai. Thick flood deposits and channel fill dating to the Bronze Age suggest that the Yellow River most likely flowed North. Third, some archaeologists argue that buried soils are a marker bed for the Anthropocene. The stratigraphic sequence contains buried soils from as early as the Pleistocene and as late as the Song dynasty, making this an ideal area to test if buried soils do reflect changes in land use. Our preliminary results suggest that an area over 50km² was buried by Yellow River flood deposits, preserving a great variety of archaeological and geological features, including roads, towns, fields, lakes, and buried soils, capable of answering many questions concerning the subsurface archaeological record of the region.

Strack, George [287] see Parsell, Veronica

Stratton, Susan (US Forest Service - Region 5)

[165] *Innovation Equals Great Partners*

As Heritage Program Leader for the Pacific Southwest Region which includes California, Hawaii, Guam, and American Samoa, I have had to come up with innovative approaches to increase capacity for the Heritage Program on each of the 18 National Forests within Region 5. This has been particularly challenging over the past couple of years as most of California seems to be burning up and Heritage staff are stretched thin across the state responding to fire emergencies and other Agency priorities. This presentation is about how Forest Service Heritage Staff have joined forces with some amazing

partners and volunteers to preserve the past and celebrate the future!

[165] *Chair*

Straus, Lawrence (University of New Mexico)

[211] *The Pleistocene-Holocene Transition in Cantabrian Spain: Current State of the Question*

Decades of research involving new excavations, chronometric dating, artifact and faunal analyses, site distribution studies and isotopic analyses have refined our understanding of the transitions from Upper Magdalenian to Azilian and then to a variety of Mesolithic cultural traditions in the period between the Allerod and Boreal climatic phases in the classic region of Cantabrian Spain. There are indicators of both continuity in some aspects of settlement, subsistence and technology at some points along this transition, as well as clear breaks either across the board (notably in expressive behavior, a.k.a. "art") or in terms of just certain aspects of culture at different times and places. The possible relative roles of changes in environment and resources versus human demography (regional population density) are evaluated in this overview in light of the currently available record. The balance between continuity and major reorganization is explored, including the recent interest in the idea of subsistence intensification leading to over-exploitation (as summarized by F.I. Gugtiérrez-Zugasti and A.B. Marin-Arroyo) in the early Holocene context of closed forest vegetation, sea level transgression and densely packed forager populations.

[170] *Discussant*

Strauss, Stephanie (The University of Texas at Austin)

[241] *Craft, Literacy, and Ephemera: Maya Textiles in the Gendered Scribal Tradition*

Although art historians, archaeologists, and epigraphers often decry the poor preservation of certain ephemeral categories of Maya hieroglyphic remains—wooden lintels, codex-style books and plaster facades—the missing corpus of ancient hieroglyphic textiles is rarely discussed. Yet unlike the handful of maddeningly flat, angular, or profile-view representations of codices in Maya art, the "extant" inscribed textiles seen in murals, painted on narrative vessels, incised into stone and molded onto figurines, are dynamic, complex, and in rare instances, fully legible. On certain occasions, the Maya elite literally wrapped themselves in hieroglyphic script; embodying written speech in a manner quite distinct from the monumental, and even small-scale and portable, scribal traditions. While many of these inscribed textiles featured painted techniques, others were likely produced by woven techniques still practiced in Maya communities today. This study of the "extant" corpus of hieroglyphic textiles problematizes a typology of textile-as-craft, and illuminates the literate, and perhaps female, artisans who created these artworks, as well as the Maya elite who performed them in lived space.

[241] *Chair*

Strawhacker, Colleen (National Snow and Ice Data Center, University of Colorado), Thomas McGovern (CUNY Human Ecodynamics Research Center (HERC)), Emily Lethbridge (Centre for Medieval Studies, University of Iceland), Gisli Pálsson (Environmental Archaeology Lab and HUMLab, Umea Uni) and Adam Brin (Digital Antiquity, Arizona State University)

[261] *Linking Transdisciplinary Data to Study the Long-Term Human Ecodynamics of the North Atlantic: The cyberNABO Project*

The cyberNABO Project is designed to solidify a developing multidisciplinary community (centered on the North Atlantic Biocultural Organization, NABO) through the development of cyberinfrastructure (CI) to study the long-term human ecodynamics of North Atlantic, a region that is especially vulnerable to ongoing climate and environmental change. It builds build upon prior sustained field and laboratory research, rich and diverse datasets, and a strong involvement by local communities and institutions. CyberNABO is currently hosting a series of workshops aimed at taking these collaborators and stakeholder communities to a new level of integration and to develop capacity for building CI and visualizations in subsequent funding cycles. Investing in a comprehensive CI system provides the opportunity to integrate collaborators and data from the natural sciences, social sciences, and the humanities, thus providing the opportunity for a holistic approach to long-term human ecodynamics in the context of rapid social and environmental change, and for the creation of digital tools for expanded northern community involvement in global change research. This paper will present the ongoing efforts of the cyberNABO project, including initial data discovery and aggregation prototypes, as well as conceptual frameworks for how to best integrate diverse datasets.

Strecker, Amy (Leiden University)

[141] *The Legal Status of Caribbean Collections Abroad*

While the restitution debate has developed substantially since the Second World War—some even herald the age of 'post-restitution'—this is not necessarily the case for the Caribbean. Although archaeological and ethnographic objects of Caribbean origin have long been expropriated, the restitution debate has not played as essential a role in post-colonial discourse in the islands as in other former colonies. This is due to a number of reasons: first, most of the cultural objects outside the Caribbean and in European and U.S. collections pre-date 1492 and are perceived to be culturally linked to pre-columbian rather than the present day multi-ethnic Caribbean societies. Second, these collections have not been studied to any great extent, thus precluding the basic knowledge required for restitution claims. Meanwhile, objects continue to be taken out of the region. This paper analyses the legal issues surrounding Caribbean objects located in museums in Europe and the U.S. It assesses the legal status of such objects, analyses the current international framework applying to the return of cultural objects illegally removed; and discusses the symbolism of restitution in the context of the CARICOM reparations claim, which includes cultural rehabilitation as one of the aims of reparation.

Streuli, Samantha A. (UC San Diego), Margaret J. Schoeninger (UC San Diego) and Andrew D. Somerville (UC San Diego)

[44] *Application of Stable Isotope Analysis to Questions of Status Formation and Dietary Disparities at Chalcatzingo, Morelos, Mexico*

The Formative period site of Chalcatzingo in Morelos, Mexico (1150–450 B.C.E.) represents a socially complex society and contains the only Olmec-style monumental architecture in the region. Evidence for social stratification at Chalcatzingo includes differences in burial location and unequal distribution of rare artifacts. Significant debate surrounds the potential Olmec cultural influence on status formation and social stratification throughout Formative period Mesoamerica. Some scholars hypothesize that Gulf Coast elites migrated inland bringing Olmec culture and social stratification with them. Because oxygen stable isotope values have been usefully applied to migration studies, oxygen stable isotope values of the human remains at Chalcatzingo will be used assess whether individuals were local to Chalcatzingo or emigrated from the Gulf Coast region. Archaeological and isotopic evidence from ancient Mesoamerica supports the idea that differential access to preferred food resources—particularly animal protein and maize—is characteristic of social inequality. Because there is evidence for social stratification at Chalcatzingo, unequal distribution of animal protein and maize is expected. Carbon and Nitrogen isotope analyses were performed on the human remains and subsequently compared to status indicators in the archaeological record. Preliminary data suggests that elites were consuming slightly more animal protein and maize than non-elites.

Strickland, Erin (Eastern Connecticut State University)**[90]** *Preliminary Results from Two Late Woodland Trash Pits from Block Island, Rhode Island*

In the summer of 2015 an archaeological dig was conducted, as part of a salvage project due to new construction, at RI-2451 on Block Island, Rhode Island. A precolumbian Native American habitation area was identified near the shoreline of the Great Salt Pond, a large and almost enclosed body of water separating the north and south regions of Block Island. The pond has a small channel, artificially dug in the late 1800s, on its northwest shore to connect it with the Block Island Sound. The shores of the pond have a long history of human use and occupation evidenced by Native American habitation sites prior to and after contact with European settlers. RI-2451 adds to this occupation, dating to the Late Woodland Period. This poster presents data recovered from two middens excavated at this habitation site. Marine shells, clam and oyster, were collected and analyzed to determine species, diet based on seasonal availability, chronological affiliation, as well as to determine midden depositional practice. Through an examination of food trash, I will discuss food consumption practices of Late Woodland Native American communities on Block Island, Rhode Island.

Strickland, Amanda [127] see Parker, Evan

Strien, Hans-Christoph [95] see Gronenborn, Detlef

Striker, Sarah (Arizona State University) and Linda Howie (HD Analytical Solutions/University of Western Onta)**[90]** *Probing Provenance: Investigating the Geographic Origins of Pottery from the Mantle Site (ca. 1525 C.E.), Ontario, using Petrographic and microprobe Analyses*

Petrographic studies of variability in the geographic origins of ancient pottery rely on discrimination of vessels based on their raw material ingredients, which can be traced to natural sources on the geological landscape. In the Great Lakes region, the glacial landscape is dominated by sediments comprising heterogeneous mixtures of eroded and transported materials, making such distinctions challenging. In this study we investigate variation in the geographic origins of pottery from the Mantle site, a late prehistoric Iroquoian village near Toronto, Ontario. Here, provenance determination is significant to site interpretations as the village developed through aggregation of diverse groups that previously lived elsewhere. To aid provenance distinctions, we have combined petrographic and microprobe analyses to generate detailed information about rock and mineral content, soil genesis and depositional environment and mineral chemistry. The microprobe analysis targeted typologically equivalent pottery differentiated as "local" (Ontario) and possibly from upper New York State based on petrographic data. Glacial sediments in each region derive from different parent rock - the Canadian Shield (Ontario) and the Appalachian Mountains (New York State). We demonstrate that despite the presence of typologically similar rock and mineral fragments, pottery from these two areas can be distinguished based on mineral chemistry.

Stringer, Lisa**[50]** *Chair*

Stringer, Lisa [50] see Curet, L.

Strong, Meghan (University of Cambridge)**[107]** *Illuminating the Path of Darkness: Transformative Aspects of Artificial Light in Dynastic Egypt*

When discussing light in Ancient Egypt, the vast majority of scholarly attention is placed on the sun, a physical constant of the landscape and the primary source of illumination. The development of ideas on the significance of natural light in Ancient Egyptian culture is abundant, particularly in religious sources. Studies on artificial light, however, stand in stark contrast to the number of academic publications on natural light. This emphasis forms a uni-dimensional view of lighting in Ancient Egypt, but creates the opportunity for a comprehensive study on the significance of artificial light within the Egyptian cultural tradition. Oil lamps, torches, and braziers were certainly employed in Ancient Egyptian domestic spaces to provide warmth and light in the evenings. Over time, however, these mundane tools were adopted and adapted into the sacred realm. In order to ensure the safe passage of their relatives to and from the land of the living, the Egyptians developed a series of rituals to provide light for the deceased along their way. This presentation will employ archaeological and art historical sources to discuss the type of light sources used, the rites with which light was associated, and the significance of providing illumination in the afterlife.

Stroth, Luke**[111]** *Rocks that Roll: Potential Spatial Applications for X-Ray Fluorescence Data*

This poster explores the potential applications of using x-ray fluorescence data to assess site integrity and site formation processes. The subject of the analysis was the fire-modified rock assemblage from the University of Iowa Field School at Woodpecker Cave (13JH202), a Late-Woodland rock shelter. The assemblage was selected because of their ubiquity throughout the site, their likely sourcing from the adjacent limestone cliff face, and association with known cultural horizons. The assemblage was subjected to an XR-F analysis. A principle component analysis was performed on the XR-F data, creating distinct groups based on chemical composition. Using the piece-plotted information, the XR-F data was projected into three-dimensional space. Discrete horizons based on chemical composition were identified. To determine if chemical variability was due to chemical changes through heat treatment or through source material, samples from the different strata of the cliff face were analyzed with the XR-F before and after being subjected to a controlled burn. Through this method, the chemical changes during thermal alteration and the taphonomic history of Woodpecker Cave were better understood.

Stuart, David (The University of Texas at Austin), Marcello Canuto (Tulane University) and Tomas Barrientos (Universidad del Valle de Guatemala)**[256]** *Archaeology, Epigraphy and the Development of Long-term Alliance at La Corona, Guatemala*

The integrated program of epigraphic and archaeological research at La Corona, Guatemala aims to document, analyze and understand the development of this highly unusual Maya center during of the Classic period. Known as Saknité' in ancient texts, La Corona served as the locus of a small court with its own dynastic history and exhibiting close and long-lasting familial and political ties with the far larger Kaanul or "Snake" kingdom centered at Dzibanche

and Calakmul. Architectural excavations at Saknikte' have documented its evolution over this same time period, often revealing close correlations with the site's written historical record. This integrated evidence shows that Saknikte' was neither an independent player nor a fully subservient vassal, but unique player on the Maya geopolitical landscape.

Sturm, Jennie (University of New Mexico)

[194] *Using Ground-Penetrating Radar to Re-evaluate the Chetro Kett Field Complex in Chaco Canyon, New Mexico*

Recent geophysical remote sensing investigations conducted in Chaco Canyon, New Mexico, have included studies at the "Chetro Kett field" complex. This area is widely interpreted as gridded agricultural fields, though a lack of other gridded fields in the canyon have led some to question whether the Chetro Kett "field" served an agricultural function. Ground-penetrating radar (GPR) surveys conducted here resulted in the unexpected identification of a complicated series of buried features at different depths within this field area. The integration of the GPR images with historic aerial photos reveals that many of these buried features have an overall structure and orientation that is distinct from the grid patterns visible on the surface. It is not possible to determine whether the collective features in this area were actually agricultural fields, but these results indicate that the Chetro Kett "field" may be more accurately interpreted as a palimpsest of prehistoric activity rather than a single instance of land modification.

Styles, Bonnie (Director Emeritus, Illinois State Museum), Mona Colburn (Research Association, Illinois State Museum) and Sarah Neusius (Professor, Indiana University of Pennsylvania)

[9] *Exploring Taphonomic and Contextual Comparability in Eastern Archaic Faunal Datasets*

The Eastern Archaic Faunal Working Group (EAFWG), established with funding from NSF, is preserving Archaic period faunal databases from interior portions of the Eastern Woodlands in tDAR (the Digital Archaeological Record) in order to undertake data integration at multiple scales that examines the use of aquatic resources across time and space during the Archaic. A major initial question about our existing datasets is how comparable they are taphonomically and contextually. Protocols for evaluating comparability before integrating faunal databases have been suggested by Southwestern zooarchaeologists. These protocols rely on a variety of variables related to bone condition, modification, and attrition and assess differences between intramural and extramural excavation contexts. However, modification is required to address the greater variety of animal resources and the different site contexts relevant in Eastern Woodlands archaeology. We have piloted a modified protocol, and in this poster, we report the variables selected and the results of our pilot study. We think that our approach will facilitate comparisons at multiple scales and will also be useful to other zooarchaeologists working in the Eastern Woodlands.

[48] *Discussant*

Styles, Bonnie [176] see Neusius, Sarah

Styring, Amy [171] see Bogaard, Amy

Suárez, Rafael (Depto. Archaeology. Universidad de la República (Uruguay))

[139] *The Early Peopling and Use of Space during the Colonization of Southeast of South America*

Research on the early occupation in the Southern Cone has turned its attention to a particular type of diagnostic artifact: the Fishtail points. Archaeological excavations conducted in Uruguay over the last 15 years have allowed indicating the presence of a cultural tradition of bifacial stemmed points, represented by at least three distinct cultural groups defined on the basis of different projectile points types: Fishtail (12,800–12,200 calibrated yr B.P.), Tigre (12,000–11,200 calibrated yr B.P.) and Pay Paso (11,080 to 10,200 calibrated yr B.P.). Recent data indicate that the Uruguay plains were occupied for at least 1000 years before the emergence of Fishtail groups. The new chronological evidence indicates human presence in the north and south of Uruguay between 14,000 to 13,300 calibrated yr B.P. This presentation discusses the early projectile point distribution, the use of space and specific locale occupational redundancy by early groups during the colonization of Southeastern South America.

[139] *Chair*

Sugiyama, Nawa (Smithsonian Institution), Saburo Sugiyama (Arizona State University and Aichi Prefectural Uni), Verónica Ortega Cabrera (Instituto Nacional de Antropología e Historia) and William L. Fash (Harvard University)

[129] *Plaza of the Columns at Teotihuacan: Scope, Goals and Expectations of a New International Project*

Summer 2015, the Plaza of the Columns Project began a multi-year collaborative investigation of two large residential/ceremonial complexes that remained unexplored at Teotihuacan's ceremonial core: Plaza of the Columns and its symmetric counterpart called Plaza North of the Sun Pyramid. The former comprises the largest three-temple complex with the fourth highest pyramid, a main plaza (11,408 m²) larger than the Sun Pyramid plaza, and deep occupational layers that could provide information about Teotihuacan's urban foundation. These qualities make this set of complexes a primary candidate to directly addresses some of the unresolved questions about Teotihuacan: how was the Teotihuacan state governance organized, and how did this vary over time? The project aims to define the Plaza of the Columns complex as a palace through closely delimiting the architectural complexes, what activities took place in these distinct areas, and who resided in this exclusive compounds. Based on a 120 Km² LiDAR map our team recently created, the project's first season focused on elaborating a three dimensional detailed map of the area under investigation, defining the architectural features and extent of the complex through establishing a dynamic collaborative team integrating students and researchers from Mexico, United States and Japan.

Sugiyama, Saburo [129] see Sugiyama, Nawa

Sugrañes, Nuria, María José Ots (INCIHUSA-CONICET/layE-FfyL-UNCu) and Michael D. Glascock (Archaeometry Laboratory, University of Missouri)

[91] *Neutron Activation Analysis in Archaeological Pottery from Mendoza, Central Western Argentina*

In Mendoza, the first record of pottery has been dated ca. 2000 years B.P. The technology used varies in terms of manufacture and decoration. Differences in cultural, social and economic organization were also present in the area. The Atuel and Diamante river basins are in a transition zone, where different kinds of social organization, farmers and pastoralists in the north and hunter-gatherers in the south were present. This variability enhances a debate about analytical ways to approach ceramic technology. Actually, archaeometric techniques have been used to study ceramics. These analyses allow us to adjust

typologies and improve our knowledge of topics related with production, mobility and interaction within populations from Mendoza. Neutron Activation Analyses (NAA) is a fundamental tool for the development of archeological ceramic research. In this poster, we show the capabilities of this technique applied to ceramics from archaeological sites in the Atuel river basin and Tupungato valley. The preliminary results show well-defined chemical groups that cluster according to chemical variables. Some groups have a strong relationship with regional types and particular environments. We also observed, that one chemical group shows a great variety of types that we assume to be associated with different and distant origins.

Sullivan, Timothy (University of Pittsburgh)

[46] *Sierra Red Ceramics, Identity, and Foodways in the Middle and Late Formative Chiapa de Corzo Polity, Chiapas, Mexico.*

Data from a surface survey of 105 sq km in and around the site of Chiapa de Corzo indicate that over the course of the Late Formative, serving vessels of Sierra Red, a style that originated in the Maya Lowlands, were widely adopted across the Chiapa de Corzo polity. At the capital early Sierra Red serving vessels largely conformed to the size of serving vessels from the Maya Lowlands. In the hinterland, however, the Sierra Red vessels people were using had dimensions that conformed more tightly with earlier local, Middle Formative, styles of serving vessels, which were larger. These data provide preliminary support for the notion that while commoners in the hinterland emulated the ceramic styles of the ruling elite at the center, their foodways were much slower to change.

Sullivan, Lauren (University of Massachusetts)

[288] *The Early Ceramic History of Cahal Pech: Implications for Local Identity and for the Rise of Regionalism in the Maya Lowlands*

Ongoing ceramic analysis at Cahal Pech have allowed for a more complete understanding of the Cunil Ceramic Complex that was originally defined by Awe in 1992. These data provide important information on the early inhabitants of the site and reflect the formation of new political strategies and identities. The innovation of ceramic manufacture and the display of specific symbols suggest that a rising elite was firmly in place by around 1000 B.C. in the Belize Valley. Recent finds suggest that similar but diverse and independent groups were scattered throughout the Maya lowlands and provide information on an emerging lowland Maya tradition. As these populations grew, a more uniform ceramic style reflects greater interregional interaction and increased political networks by the end of the Middle Preclassic.

[109] *Discussant*

Sullivan, Kelsey (University of Oregon) and Jaime J. Awe (Northern Arizona University)

[179] *Ancient Maya Craft Specialization in the Belize Valley*

Archaeological investigations during the last 20 years in Western Belize has recorded considerable evidence of craft specialization in this lowland Maya sub-region. Much of this information, however, has never been synthesized, thus providing us with a foggy lens through which to view the complexity of craft production, distribution and interaction at the intra- and inter-regional level. In an effort to address this situation, this paper examines different types of craft specialization in the Belize Valley, the control of production areas by major political and economic centers, as well as implications of distribution within and outside of the Western Belize.

Sullivan, Vanessa (IVI Telecom Services, a CBRE Company)

[227] *Frontier Conflict Along the Central-Murray River in South Australia: A Spatial Reconstruction Approach to the Archaeology Of Conflict*

The visibility of conflict in the archaeological record is often limited, especially when associated with the Australian frontier. As such, a holistic approach is proposed as a means to identify conflict and address the question: to what degree is the nature of conflict between Aboriginal groups and European settlers between 1830 and 1900 visible in the historical and archaeological record of the Central River Murray, South Australia? This approach applies methods from multiple disciplines and incorporates archival, archaeological and geographical methods. Archival data and primary sources are used to identify areas of interaction amongst European and Aboriginal groups. These locations are analyzed spatially to identify and interpret patterns and trends; thus transforming the study area into a dynamic landscape rather than sites independent of each other. The spatial analysis, paired with an assessment of ground disturbance, enables an evaluation of archaeological sensitivity—specifically, identifying areas associated with conflict. It is theorized that these locations may have a visible archaeological signature that can be investigated in future research. Ultimately, the identified potential will enhance the understanding of cultural 'contact,' especially within South Australia. Furthermore, the holistic approach has global applications; therefore, it provides a template for other conflict archaeology studies.

Sumano, Kimberly (El Colegio de Michoacán) and Joshua Englehardt (El Colegio de Michoacán)

[101] *Architectural Discourse and Sociocultural Structure at Los Guachimontones, Jalisco*

The site of Los Guachimontones, in central Jalisco state, Mexico, has long been the subject of intensive archaeological research, beginning in the 1970s with Weigand's investigations of the site's unique circular architectonic configurations. Nonetheless, a detailed understanding of intra-site architectonic variability eludes adequate explanation and obscures our comprehension of the internal sociopolitical dynamics of the site. To address these lacunae, this paper compares two distinct areas of the site—Loma Alta and the nuclear core—that are thought to have been socially differentiated habitational and ceremonial zones, based on variability in the spatial organization of their respective architectural complexes. Departing from a dual-processual framework, the authors analyze differences in the spatial syntax, formal characteristics, and distribution of architectural groups in these zones. Synchronic and diachronic variability in these aspects may indicate distinct functions of discrete areas within the site, and demonstrate how the socio-structural organization of the groups that occupied Los Guachimontones was negotiated, reflected, and reified in the architectural configurations of the built environment. This analysis thus contributes to a more nuanced understanding of the sociocultural dynamics of a site recognized as key to understanding the development of social complexity in western Mesoamerica.

Sumano, Kimberly [101] see Muñiz, David

Sun, Zhuo [173] see Chen, Xiao

Supernant, Kisha [132] see Ames, Kenneth

Supernant, Kisha (University of Alberta, Department of Anthropology)**[190]** *Mobility, Material Culture, and Métis Identity: A Comparison of 19th Century Wintering Camps in the Canadian West*

Relationships between artifact assemblages and cultural identities are complex and difficult to disentangle. The Canadian west during the 1800s provides an interesting historical and archaeological case study that has potential to shed light on the dynamics of settlement, material culture, and the mobile nature of Métis peoples. Based originally in the Red River Settlement, some of the Métis began to expand west after 1845, forming interconnected wintering communities to participate in winter bison hunting. These wintering communities were almost entirely inhabited by Métis families, so the assemblages from wintering sites present a test case to examine the day to day material culture of the Métis hunting brigades during the mid- to late-1800s. In this paper, I examine patterns from previous and new excavations of Métis wintering sites in Alberta and Saskatchewan to explore how Métis communities balanced the mobility of buffalo hunting with the need for a protected home base during the difficult prairie winters. I compare assemblages across sites and make inferences about the complex nature of Métis identities during the nineteenth century, including the relationship between mobility, family, and the economics of buffalo hunting.

Surette, Flannery**[45]** *The Night is Dark and Full of Terrors on the North Coast of Peru—Moon Animals in the Virú Imagination*

In the iconography of the north coast of Peru, Moon Animals are otherworldly quadrupedal predators which consistently have prominent eyes, teeth, tongues and claws, long curling tails and large head crests. They can resemble felines or foxes while other depictions appear more reptilian or amphibian. The name originates from the association with lunar and astral motifs in Moche art during the Early Intermediate Period (200 B.C.–A.D. 800). These Moche examples have come to define in the literature what is, in fact, an older and widespread motif, one which had been folded into the Moche pantheon and associated with a new set of symbols. This paper explores the appearance of Moon Animals in the pantheon of the Virú polity, contemporaries of the Moche, as they appear in a variety of media including stone, cloth and ceramic, and in both the public and private spheres where they often lack the lunar association. Rather, Virú examples highlight the motif's origin in the northern Andean highlands, emphasizing the Virú polity's tendency to look east to the Andes for iconographic inspiration alongside trade in physical goods.

[45] *Chair***Surface-Evans, Sarah (Central Michigan University)****[221]** *Discourses of the Haunted: Community-Based Archaeology at the Mount Pleasant Indian Industrial Boarding School*

Haunting is a way to conceptualize and recognize traumatic events of the past. In some cases, past trauma becomes so well hidden that it produces specters whose origin and source may not be readily identified or acknowledged, yet still have the power to do harm. This metaphor of haunting is especially apt when considering the United States Federal Indian Boarding School era. The cultural genocide attempted by Federal Indian boarding schools is still felt in American Indian communities as generational trauma. Perhaps one of the greatest strengths of community-based archaeology is its potential for drawing out ghosts, acknowledging their presence, and giving them a voice. This research is part of a grass-roots effort to decolonize the historic narrative of the Mount Pleasant Indian Industrial Boarding School by the Saginaw Chippewa Indian Tribe of Michigan. Drawing on archaeological data, documentary evidence, and oral histories, I will share a series of stories that expose specters of the past and reveal narratives of empowerment, particularly for the women in the community.

Surmely, Frederic [145] see Ernenwein, Eileen

Surovell, Todd [115] see Grund, Brigid

Susak Pitzer, Angela (University of California, Los Angeles)**[224]** *Glass Reflecting Value: A Multi-Disciplinary Study of Roman Glass from Karanis, Egypt*

This multi-disciplinary study of glass from Karanis, Egypt combines archaeological, chemical compositional data, ethnoarchaeology, and historical insights to assess how objects were valued in the ancient world. The selection of raw materials is investigated through onsite portable X-ray fluorescence (pXRF) spectrometry analysis of recently excavated Karanis glass dating primarily to the late Roman period (fourth–sixth centuries C.E.). Quantitative analysis of these data informed by pXRF and electron probe micro-analysis (EPMA) of museum specimens from Karanis, helps discern compositional groups. At least two groups most likely represent recycled glass due to the presence of both manganese and antimony above trace levels. This research contributes to the debate regarding the location, organization, and scale of glass manufacturing during the Roman period. Closer examination of three morphological types found at Karanis—unguentaria, rectangular bottles, and oil flasks—reveals relationships among compositional types, archaeological context, and social functions of objects. In the late Roman period, an age when blown glass was commoditized and available to a broader demographic, Karanians used high-quality colorless oil flasks as a means of conspicuous consumption. Glass objects valued for the materials they contained were often made from lower quality recycled glass.

Sussman, Emily (East Carolina University) and Megan Perry (East Carolina University)**[189]** *Comparing Methodologies for Documenting Commingled and Fragmentary Human Remains*

Commingled and fragmentary human remains are a common occurrence in archaeological and forensic contexts, but only a few methods have been developed to record these complex assemblages. Conventional inventory methods, such as the Standards for Data Collection from Human Skeletal Remains, document the presence and completeness of specific portions of skeletal elements and the minimum number of individuals (MNI) represented by each bone portion. This rather subjective method for MNI calculation does not provide much transparency for future researchers using these data. However, new techniques for recording, analyzing, and MNI calculation have been developed using zooarchaeological zonation methods which document specific features present rather than more general measures of completeness.

This study identifies any significant differences in MNI calculation results using Standards versus Osterholtz's methods, through reanalysis of the assemblage of fragmented, commingled remains recovered during the 2012 season of the Petra North Ridge Project (preliminary MNI = 30). The MNI based on Osterholtz's visual-based system was not significantly different from that using Standards. Therefore, the precision of the two methods combined

with the better metadata in Osterholtz's system suggests that this one should be the choice for individuals working with commingled and fragmentary remains.

Sutherland, Adam (University of Illinois, Urbana-Champaign) and Montana Martin (University of Illinois, Urbana-Champaign)

[197] *What Remains: Using LiDAR to Examine the Effects of Plowing on Memories and Mounds in Illinois*

Constructing monuments is, in essence, a construction of memory. Conversely, destruction of monuments can be the erosion of memory. Pre-Columbian peoples in the Americas built and maintained monuments as a form of memory-making and place-making. Digital Elevation Models (DEM) provide us an opportunity to re-discover the monuments and re-animate the memories that have been obscured since European arrival. Using LiDAR data, geo-referenced with historic maps, we look at the present state of precolumbian mounds in Illinois. In this paper we discuss how the continued destruction of Native American mounds is not only the deterioration of archaeological potential but, also the further erasure of Native American memory and connection to the landscape.

[197] *Chair*

Sutter, Richard (Indiana University-Purdue University Fort Wayne)

[118] *The Incorporation of the Chicama Valley into the Southern Moche Polity (A.D. 200–900): A Preliminary Biodistance Assessment*

Nascent state formation is often purported involved the incorporation of nonlocal peoples, this question still remains unresolved for the southern Moche (A.D. 200–900) polity thought to be centered at the Pyramids at Moche site. Some archaeologists (Castillo and Uceda 2010) that the southern Moche state's expansion began following the incorporation of the Cao Viejo polity within the Chicama Valley to the north. Further, a recently published reevaluation of radiocarbon dates for Moche ceramics associated with the traditional five phase Moche ceramic sequence suggests that Moche III phase ceramics originated in the Moche Valley and later appear in the Chicama Valley to the north, concomitant with the proposed expansion of the southern Moche polity. This study reports biodistance analyses for recently collected genetically influenced tooth trait data from both the Pyramids at Moche and Cao Viejo sites to put this hypothesis to the test. The broader implications of the results are discussed.

Sutton, Wendy (USDA Forest Service, Gila NF)

[267] *Celebrating Native Interpretations of "Rock Art" on the Gila National Forest*

Commonly known as "rock art," pictographs (pigment on rock) and petroglyphs (images pecked or incised into rock) are much more than art. They reflect the history and values of peoples who once lived here and are a tangible reminder of their connection to the landscape. The Gila National Forest is installing interpretive signage at or near multiple well-known "rock art" sites in celebration of the 50th anniversary of the National Historic Preservation Act (NHPA). These signs, and additional web-based materials, celebrate Native interpretations and provide valuable guidance on how to treat "rock art" so that it survives into the future. As expressed by Curtis Quam (of the Zuni CRAT), "(projects) like these and experiencing these places is really important...particularly sharing it with the kids." Multiple tribes and pueblos have been invited to participate in the project. Representatives from Zuni, the Mescalero Apache, and the White Mountain Apache have generously shared their interpretations of panels. Working together with the tribes on this project has provided an opportunity for tribes to reconnect with these special places, has been a rewarding experience for Forest personnel, and will enhance visitor experience for years to come.

[267] *Chair*

Suyuc, Edgar [59] see Hansen, Richard

Swantek, Laura (Arizona State University)

[257] *A Complex Systems and Network Science Approach to the Emergence of Social Complexity on Cyprus during the Prehistoric Bronze Age*

People who seek wealth and power structure and restructure the social networks that underlie society. From these networks that bind people together and facilitate the movement of goods, services and information, emerges the phenomenon we call social complexity. To better understand this phenomenon in past societies, this project uses data from the Prehistoric Bronze Age on Cyprus (2400–1700 Cal B.C.E.) and novel methods derived from complex systems and small world network science, and modern economics, namely Gini Coefficients for quantifying wealth inequality. Using data from previously excavated settlements and cemeteries, this project focuses on building the networks that structure society at the community, region and island-wide scales during each sub-period of the Prehistoric Bronze Age (Philia Phase, PreBA 1, PreBA 2) through archaeological proxies for the control of labor, participation in inter- and intra-regional and international trade, and access to technological, material and ideological resources. This paper will present the results of this study, highlighting social instability over time in a non-linear trajectory toward increasing social complexity and regional differences. Further, it will illustrate how shifts in underlying social networks are linked to reaching certain thresholds of inequality within societies.

Swarts, Kelly (Cornell University), Lewis Borck (University of Arizona), Lynda Prim (Native Seeds/SEARCH), Andrea Stanley (Borderlands Restoration) and Edward Buckler (Cornell University)

[66] *Partitioning Variance in Maize Landrace Flowering Time by Cultural Affiliation, Geography, and Genetic Relatedness*

Domesticates are uniquely both biological organisms but also cultural artifacts. As organisms, domesticates are shaped by the natural history of the progenitor and adaptation to diverse environments. As artifacts, domesticates record the cultivation practices, migration histories, cultural interactions and values of associated human groups. Using a population of maize landrace hybrids from the Greater Southwest (U.S. and Mexico) that have been phenotyped for flowering time, we test how much of the variance in flowering time can be explained using relationship matrices developed from genomic sequence data, spatial and environmental parameters, and strength of social interaction between associated cultural groups.

Swedlund, Alan C. [168] see Warren, Amy

Sweeney, Alex (Brockington & Associates) and Kara Bridgman Sweeney (Georgia Southern University)

[243] *Chibariyo! Navigating Cultural Resources Compliance on U.S. Military Installations in Japan*

Following World War II, the U.S. established military bases throughout Japan. Multiple cultural resources investigations have since been conducted at many of these facilities in compliance with applicable U.S. federal laws and regulations, the Government of Japan's laws, and guidelines outlined by U.S.

Forces Japan. Success in these projects required meetings with various stakeholders, including the Prefectural and local municipal Boards of Education in Honshu and Okinawa, Japan. These investigations have contributed to ongoing processes of inventory and evaluation of historic architectural properties, archaeological sites, and traditional cultural properties, as well as the development of detailed management procedures for addressing effects of proposed projects on significant cultural resources at U.S. military facilities. These international investigations have allowed us to reflect on the Section 106 process followed stateside, and compare it to the Section 402 process of the NHPA and other cultural resources guidelines that are applicable to U.S. military installations in Japan. This paper considers the complexities of cultural resources compliance in Japan, where regulations can extend beyond federal land and undertakings. Additionally, we will discuss the higher incidence of government-funded archaeologists in Japan and the roles of those stakeholders at the local scale of archaeological practice.

Swenson, Edward [99] see Spence-Morrow, Giles

Swenson, Edward (University of Toronto)

[105] *Sacrificial Landscapes and the Anatomy of Moche Biopolitics*

Power in Moche society was fundamentally biopolitical, expressed through the violent deconstruction and reconstruction of bodies, including animate places. An examination of Moche architecture reveals that North Coast populations envisioned built environments as living organisms that were biologically dependent on human communities. The erection and renovation of Moche ceremonial architecture played an instrumental role in the generation of life and the harnessing of vital forces. Therefore, Moche religious structures cannot be interpreted simply as the "house of gods" or as arenas for ritual performance, for they seem to have served as powerful media for the cycling of biological energy underwriting Moche political ecologies. Archaeological evidence will be mobilized that Moche monumental architecture were perceived as metabolizing bodies that sympathetically channelled the life-giving powers of mountain peaks. The data suggest that temple mounds were literally fed, sacrificed, and renewed to maintain covenants with natural landforms and related ecological forces. The concept of biopolitics has been applied by Agamben, Foucault, and others to describe the insidious working of power in our postmodernist world. However, an investigation of Moche religious ideology reveals that violence as arbiter of life has long played a central if variable role in the reification of social difference.

Swindles, Graeme [95] see Armit, Ian

Swogger, John (Archaeological Illustrator)

[182] *Thinking Outside The Panel: Using Comics to Engage with Multiple Audiences during Archaeological Field Schools*

Comics are an effective medium for promoting engagement with archaeology, as they are able to communicate complex and detailed archaeological information to audiences unfamiliar with its concepts and practice. This communication is facilitated both through the comic itself and the process of creating it.

During the University of Oregon's Palau Archaeology 2015 field school on the island of Palau, Micronesia, comics were used to present the ongoing results of excavations to multiple audiences. These audiences included "the public" in its broadest sense (tourists, local residents, schools and colleges, etc.), but also more specialist audiences: the Palau Bureau of Arts and Culture, state and national government executive officers, the community of Palauan Heritage Protection Officers, the National Museum, other science and field researchers on the islands, as well as students participating in the five-week field school.

Making comics introduced different kinds of discourse with each of these audiences. The end result was comics (as documents) which presented the results of the archaeological research, but also comics (as process) which built outreach relationships with fieldwork stakeholders. This use of comics on Palau demonstrates how the medium can create effective and innovative communication at multiple levels within archaeological field practice.

Sykes, Naomi [100] see Perdikaris, Sophia

Sykes, Naomi (University of Nottingham), Holly Miller (University of Nottingham) and Karis Baker (University of Durham)

[223] *Bio-cultural Exchange and Human Health—Past and Present*

There is growing concern about the impact of biological exchange on human health, the WHO correlating shifts in biodiversity with the decline of medicinal biota and the emergence and spread of infectious diseases. Paradoxically, human desire to improve health and well-being has been the very motivation behind the worldwide translocation of many species. This is, in part, because ethnomedicine tends to target preferentially species that are exotic, the belief being that geographical distance is equated with supernatural distance and that the healing power of organisms increases with their cultural remoteness. Medicine is seldom considered in archaeological studies of biogeography but this paper will highlight the role that medico-religious beliefs have played in biological exchange. As a case-study, we present the evidence relating to the fallow deer (*Dama dama dama*), a species native to the eastern Mediterranean but now the most widely dispersed cervid on the planet. By contextualising the data from an international programme of genetic analyses we will argue that the ancient pan-European translocation of the fallow deer was prompted by medico-religious knowledge travelling down the Silk Road. The legacy of this exchange continues to have implications for modern human (and environmental) health.

Szigeti, Anna (University of Szeged), Virág Varga (University of Cincinnati) and Viktória Kiss (Hungarian Academy of Sciences)

[149] *A Preliminary Analysis of the Metal Finds from Békés 103*

Bronze is a central economic and symbolic focus in the European Bronze Age, and the distribution of metals found in Bronze Age burial contexts can suggest differences in wealth. This poster analyzes the bronze artifacts from the site of Békés 103, a Bronze Age site in Eastern Hungary. Previous work at settlements in this area indicates little social inequality and suggests that metal production was not centralized at larger settlements (fortified tell-sites). Study of the distribution of metals and other exotic goods in funerary contexts provides an additional avenue for understanding the circulation of exotic goods. So far, excavation at this cemetery produced mostly pins and arm rings, common body ornamentation of the time. In this paper, we consider the distribution, spatial arrangement, and sex and age of the recipients of these finds. We attempt to understand whether the funerary display of bronze differed in this region compared to neighboring areas, suggesting more equal access to resources.

Szpak, Paul (University of British Columbia)

[134] *Large Changes Environmental Changes Following Commercial Whaling in the Eastern Canadian Arctic*

Stable isotope records from dovekie (*Alle alle*), ringed seal (*Pusa hispida*) and bowhead whale (*Balaena mysticetus*) bones recovered from archaeological sites in eastern North American High Arctic (northwestern Greenland and eastern Canadian Arctic) reveal little auks declined an entire trophic level in the 20th century, following stability between the twelfth and early twentieth centuries. Conversely, bowhead whale trophic level remained stable and ringed seal trophic level slightly increased across the same period. These data are consistent with little auks relying to a much greater extent on relatively high trophic level prey (predatory amphipods and small fish) when bowheads were abundant. After the depletion of bowhead whales in the eighteenth and nineteenth centuries, however, a large-scale change in the diet of little auks occurred, with increased specialization on herbivorous copepods (*Calanus* sp.), driven by ecological release from competition with bowheads. The isotopic data suggest that the modern trophic ecology of the little auk is an artifact of ecosystem changes precipitated by historic and recent fisheries.

Szremski, Kasia (Vanderbilt University)**[118]** *The Chaupiyunga as an Eco-cultural Frontier: Inter-zonal exchange and negotiation in the Huanangue Valley during the Late Intermediate Period (1100–1470 C.E.)*

As a region of high ethnic and ecological diversity, the ancient Andes can be viewed as a collection of ecological, cultural, and political frontiers. Studying the processes that occurred along these frontiers is vital to understanding the indigenous political and economic systems that developed throughout the region prior to Spanish contact. As a transitional zone between the coast and the highlands, as well as a geographic bottleneck through which people and goods had to pass, the chaupiyunga was a key ecological and cultural frontier where inter-group and inter-regional relationships were negotiated. Here, I use the Huanangue Valley as a case study in ancient chaupiyunga frontier processes. Specifically, I focus on the Chancay site of Cerro Blanco and its role as a gateway settlement during the Late Intermediate Period (1100-1470 C.E.). I argue that Cerro Blanco acted as a node through which inter-zonal trade passed as well as a locus where Chancay, Atavillos, and chaupiyungino (a local Huanangue Valley group) relationships were negotiated and that these relationships had the potential to profoundly impact the socio-political organization of said communities. By doing so, this paper demonstrates the impact that frontier processes had on the socio-political development in the ancient Andes.

Szumilewicz, Amy (Southern Illinois University, Carbondale)**[92]** *Sicán Painted Textiles: Producer's and Multi-Craft Perspectives*

Two types of painted textiles exist within controlled funerary contexts from the Middle Sicán culture (900–1100 C.E.) on the North coast of Peru. The first represents the genre of painted cloth in a traditional sense: woven textiles with decorative elements added to the final product. The other is a more complex, multi-crafted and multi-stepped object that combines the labor intensive production of sheet-metal, cotton textile, gesso-like clay, and the final application of painted designs. These two classes of painted textiles served different functions within their shared contexts. The first as malleable linings for the interior of the deceased's funerary bundle, and the latter as rigid "wrappings" for the tomb itself. This poster compares the technologies of these objects through material, production, and their ultimate uses. Discussion focuses on producers' roles in not only the manufacture of textile media alone, but the likelihood of a production process not limited to single material-single crafter models. These objects provide a site for understanding plural identities of crafters involved in interactive, multi-crafting settings.

Szymanski, Ryan (Washington State University)**[181]** *Landcover Change and Economic Change During the Iron Age in Western Kenya*

Archaeological evidence from numerous sites throughout Western Kenya show that the Iron Age was a time of considerable environmental and cultural change in this region. A short sediment core derived from lower Kingwal Swamp was collected and analyzed for its microbotanical, fungal, and charcoal content with the goal of clarifying the duration, context, and extent of these changes as visible through landscape modification. These sediments capture approximately the last 1800 years of ecological history in this area, and indicate that significant clearance for cultivation has taken place through this period, and particularly in recent centuries associated with maize agriculture. Additionally, microbial evidence suggests that considerable fluctuation in the local presence of large herbivores has occurred through time. A more nuanced picture of the ecology of a region with relatively poorly known archaeology is further made available.

Tabarev, Andrei [21] see Gillam, Christopher

Taboada, Constanza [259] see Angiorama, Carlos

Tabor, Neil [22] see Kappelman, John

Tackney, Justin (University of Utah), Dennis H O'Rourke (University of Utah, Salt Lake City, UT) and Anne M Jensen (UIC Science LLC, Barrow, AK)**[160]** *Sweet aDNA O'Mine: The Rise and Fall of Ice Sheets and the Arctic Peopling from Beringia*

The peopling of the North American Arctic was made possible after the full retreat of the Laurentide ice sheet. The archaeological record supports multiple migrations beginning approximately 6,000 years B.P., thousands of years after the initial colonization of the Americas. Modern Iñupiat/Inuit peoples are the descendants of a recent (~800 ybp) and rapid (<200 years) migration by the Neo-Eskimo Thule. The Thule brought with them specialized technological developments adapted for the exploitation of terrestrial and marine resources in the warming climate, particularly whaling. The Iñupiat/Inuit people of today, while sharing common ancestry with all Native Americans, represent a distinct genetic contribution from later Beringians. We investigated two pre-contact archaeological sites with human burials. Nuvuk at Pt. Barrow, AK, with radiocarbon dates spanning Early Thule to modern Iñupiat Eskimo and Igliqtiqsiugvigruaq, a more recent (turn of the nineteenth century) and interior Alaskan site located inside the boundary of Kobuk Valley National Park, adjacent to the Kobuk River. Three individuals from each site were chosen for targeted mitochondrial capture and next-generation sequencing. Our ancient DNA results allow refinement of phylogeny and coalescence dates for Arctic-specific mitochondrial clades, and demonstrate continuity between prehistoric and extant Arctic populations.

Tackney, Justin [160] see Stone, Jessica

Tafari, Aurelien (University of South Florida), Robert H. Tykot (University of South Florida) and Kewin Pêche-Quilichini (University of Montpellier)

[257] *A Provenance Study of Ceramics from Final Bronze Age Sites in Corsica using Non-Destructive Pxr Analysis*

This paper presents the results of a study of Final Bronze Age ceramics in Corsica, which took place during summer 2015. More than three hundred sherds from six different sites were analyzed using a non-destructive technology, XRF (X-ray fluorescence), to identify trace elements. The use of a handheld device allowed the archaeometric study in situ of collections preserved in the Sartene museum, which could not have been removed and sent for analysis otherwise, and their comparison with artifacts found during recent excavations, for which a more comprehensive context is available. The aim of the study is to explore, at a regional scale, the extent of the exchanges taking place between sites located in different ecological environments, and having therefore access to different kinds of resources. In particular, it focuses on the distribution pattern of the fine ware appearing at the beginning of the period: its manufacturing process, markedly distinct from the traditional coarse ware, suggests it could have been a specialized production, obeying to a differential distribution pattern.

Taivalkoski, Ariel (University at Buffalo), Caroline Funk (University at Buffalo), Debra Corbett (Nanuetset Heritage) and Brian Hoffman (Hamline University)

[124] *Avian Skeletal Part Representation at 49-KIS-050*

Zooarchaeological avifauna analyses demonstrate that wing elements tend to be overrepresented in archaeological assemblages from diverse temporal and cultural contexts. There have been several explanations for this phenomenon including bone density, differential transport and more recently, Bovy's social zooarchaeological interpretations for the overall overabundance of wing elements, as well as specifically of distal wing elements in the Watmough Bay assemblage. The avifaunal assemblage (n=5,360) from 49-KIS-050, a 2,500-year-old Aleut village midden site on Alaska's Kiska Island, western Aleutian Islands, also is dominated by wing elements, in this case by proximal wing elements. A comparison of the 49-KIS-050 assemblage with the Watmough Bay site materials yields insight into cross-cultural practices in the treatment and disposal of avifauna. Analyses sensitive to Aleut traditional practices provide a culturally specific context for the avifaunal patterns present in the 49-KIS-050 assemblage.

Takamiya, Hiroto (Kagoshima university), Hitoshi Yonenobu (Nanuto University of Education), Taiji Kurozumi (Natural History Museum and Institute, Chiba) and Takeji Toizumi (Waseda University)

[173] *Prehistoric Human Impacts to Islands of Amami and Okinawa, Japan*

Islands colonization by Homo sapiens is relatively recent phenomenon in the history of Homo sapiens (modern human or human afterwards). While modern human successfully colonized five continents by 10,000 years ago, only handful islands were colonized by 10,000 years ago. Most islands were successfully colonized after 10,000 years ago. Islands seem to be one of the most difficult environments for modern humans to successfully colonize. However, once Homo sapiens successfully colonized island environments, they greatly affected pristine island environment. They introduced new animal and plant species, over hunted animals, over harvested plants, modified natural forests, and so on. In many islands, such as islands in the Mediterranean, Caribbean, and Oceania, environmental changes have been recognized after human colonization. In the case of island archaeology, human impacts to island environments after successful colonization appears to be the "rule." We have attempted to trace human impacts to the islands of Amami and Okinawa, Japan for many years. However, our studies indicate that human impacts to these islands by humans after their successful colonization is not as obvious as other island cases. This might be very rare case in terms of island archaeology.

Talbot, Richard [104] see Richens, Lane

Tankersley, Kenneth (University of Cincinnati) and Jessica Thress (University of Cincinnati)

[138] *Salt Pollution and Climate Change at Chaco Canyon, New Mexico*

In order to determine if the water management systems of ancestral Puebloans caused salt pollution during periods of climatic change and increased aridity, sediment samples were collected from ancient irrigation features and reservoirs in Chaco Canyon, New Mexico. Today, these features are filled with sediments. Periods of climate change were determined with AMS radiocarbon and OSL dating. Soil salinity was measured using a conductivity cell and plotted against age in order to illustrate changes in salt content through time. Salinity levels were measured at 10 cm intervals and ranged between 11.3 ppm and more than 3,000 ppm clearly illustrating changes in the quantity of salt through time. Rather than elevating soil salinity levels to the point that agricultural fields could no longer be farmed, water management systems constructed during periods of climate change greatly diluted natural salinity levels. This research expands our knowledge and understanding of the cost, in terms of water management and salt pollution, of developing an urban center in an arid region during periods of climate change. This suite of archaeological and climatic data fills an important gap in our knowledge of ancestral Puebloans as it relates to water management and climate change.

Tantaleán, Henry (Cotsen Institute of Archaeology, UCLA)

[99] *Andean Ontologies: An Introduction to the Substance*

In the last decade a number of studies have been published focusing on the way Andean peoples both in the past and present, describe and define their world and its relational elements. These ontologies are derived from anthropology, ethnohistory and ethnography. Most of them intend to reconstruct the worldview of these social groups with different results. In this paper, I summarize the main trends related to ontologies developed for Andean societies, especially those used to explain prehispanic societies. I draw a cautionary note with such interpretations as there is the danger to correlate them directly with ontologies from the historical period. In addition, I outline future directions that research regarding Andean ontologies may follow in an effort to understand Andean peoples in their own historical milieu.

[99] *Chair*

Tappen, Martha [87] see Coil, Reed

Tavera Medina, Ana Carito (Universidad Nacional Mayor de San Marcos) and SARAH MARTINI (HARVARD UNIVERSITY)

[118] *Revisiting the Pre Moche-Moche Transition on the El Brujo Geological Terrace: A Spatially Significant Ceramic Analysis*

Understanding the social relationships represented by Salinar, Gallinazo, and early Moche ceramics remains one of the important, disputed issues in archaeology on the north coast of Peru. All three ceramic styles are present in material collected during excavations of architectural nuclei around the El Brujo geologic terrace in the Chicama valley over the last 25 years. Here we present an analysis of these ceramics which relate to the transition between

the Formative and Early Intermediate Periods with the objective of characterizing the vertical and horizontal distributions of the different styles. A comparison of the macro-features of the PACEB material with those mentioned in previous studies allows us to identify both characteristics specific to the El Brujo terrace and those that seem to remain constant between sites. By combining these findings with an analysis of the sherds' spatial distribution using ArcGIS, we examine the accuracy of the major pre-Moche models proposed in the roundtable on Gallinazo in 2009. Our results contribute to the discussions started at this first meeting by investigating the role of El Brujo in this pre-Moche time period.

Tayles, Nancy [25] see Halcrow, Sian

Taylor, Sarah [6] see Locascio, William

Taylor, Sarah (University of South Florida) and Carl Halbirt (City of St. Augustine)

[8] *Mitigating Hurricane Risk in Colonial St. Augustine, Florida*

This poster explores hurricane risk mitigation in colonial St. Augustine, Florida, from the sixteenth to the nineteenth centuries. The city was primarily under Spanish rule during these centuries, although brief British and American periods are also represented. While St. Augustine is not a hurricane hot spot it does suffer occasional blows. Its waterfront location and the importance of shipping and fishing to the local economy made the town vulnerable to hurricane-associated wind and flooding. By considering a combination of historical and archaeological data we piece together a picture of how the town attempted to reduce its vulnerability to these hazards through modifying the built environment, and how effective their efforts might have been.

Taylor, Jay (Indiana University of Pennsylvania)

[36] *Tools of the Trade: An Analysis of Tools at Historic Hanna's Town*

The purpose of this poster is to discuss the analysis of tools found at Hanna's Town, and to determine the nature of the various tasks performed by its residents, as well as the town's economic conditions. This study aims to answer the following research questions: (1.) What kinds of tools are present at Hanna's Town and what tasks are they associated with? (2.) Does the spatial arrangement of these artifacts reveal any information about where these tasks took place? (3.) Are there any relationships between these tools that may indicate the presence of a specific profession in Hanna's Town? (4.) What can the quantity of artifacts and their condition (modifications, evidence of repair, and stylistic variation) tell us about the availability of these goods through trade at Hanna's Town? Because little information survives about Hanna's Town, these results will provide valuable information about the day to day life of Hanna's Town residents.

Teeter, Wendy (Fowler Museum at UCLA)

[202] *Discussant*

ten Bruggencate, Rachel [214] see Fayek, Mostafa

Tenorio, Dolores [183] see Velasquez, Veronica

Terrenato, Nic (University of Michigan)

[33] *Moderator*

Terry, Richard (Brigham Young University), Bryce M. Brown (Brigham Young University), Aline Magnoni (Tulane University) and Tanya Carino (Universidad de las Américas Puebla)

[125] *Extraction of Soil Biomarkers from the Sacred Cacao Groves of the Maya*

In Post Classic and Colonial times, cacao was an important crop to the Maya. Landa and others reported sacred groves of trees in the Yucatan region, and among these groves they saw cacao growing. When the Spanish arrived in Mexico, cacao seeds were even used as a form of currency near Chichen Itza. Cacao typically grows in hot, humid climates. The Yucatan region is too dry and humidity is too low during the winter months to sustain cacao, but it has been found to grow in the humid microclimates of rejolladas. Here, we explore methods for extracting cacao biomarkers from soils in the region to better understand which types of rejolladas can be used to grow cacao. Cacao is the only known plant in the region to produce theobromine and caffeine so we used those chemical markers to determine whether or not cacao had previously been grown in the rejolladas sampled. We proceeded to extract soils from various rejolladas in the region. We found significant amounts of theobromine and caffeine in six of the thirteen rejolladas tested.

Terry, Karisa [150] see Buvit, Ian

TESTÉ, Marc (Laboratory of Physical Geography, UMR CNRS 8591, University Paris I.), Cyril CASTANET (University Paris 8, Vincennes - Saint Denis), Aline GARNIER (University Paris-Est-Créteil), Nicole LIMONDIN-LOZOUET (Laboratory of Physical Geography, UMR CNRS 8591, U) and Eva LEMONNIER (University Paris I, Panthéon-Sorbonne)

[237] *Proposed Reconstruction of Palaeoenvironmental Dynamics in the Region of Naachtun (Péten, Guatemala) during the Late Holocene: Contribution of Several Bioindicators in a Multi-Proxy Study*

The city of Naachtun was an important maya Center in Southern Lowland (Guatemala). It was occupied from the early Classic (250 A.D.) to the end of Late Classic period (950 A.D.). Its inhabitants developed agriculture and a water management, as attested by geo-archaeological evidences (palaeo-soils, terraces, water reservoirs and canal). Our study focuses on the palaeoenvironments in and around Naachtun during the last 3,500 years. We develop a multi-proxy approach based on bioindicators study to reconstruct past environments and socio-environmental dynamics. The sedimentary framework is established for the periphery of Naachtun in the north wetlands. Sediments cover the period of human occupation from the Preclassic period and yield a wide range of fossil groups. Several of these microfossils will be used to conduct our multi-proxy palaeoenvironmental study: Phytoliths, Pollens, Microcoals and Molluscs. Particularly, the phytoliths (siliceous particles produced by plants) have a significant potential for the reconstructions of past vegetation assemblages. These fossils, differentiating Poaceae subfamilies and charred phytoliths, also provide information on the use of plant

resources by human societies and their impact on landscapes. Finally, the use of several bioindicators with a different mineralization (calcareous shells, sporopollenin) will allow to improve the accuracy of the palaeoenvironmental reconstructions.

Thacker, Paul (Wake Forest University)

[211] *Raw Material Provisioning and Tool Rejuvenation Practices: Environmental Change and Technological Tensions in the Middle Archaic of the North Carolina Piedmont*

Flaked stone artifact assemblages from stratified contexts in central North Carolina reveal a significant shift in lithic technological organization during the Middle Archaic period. Important changes in raw material provisioning, biface production strategies, resharpening techniques, and stone tool discard behaviors broadly correlate with regional environmental shifts attributed to the mid-Holocene Optimum. Technological and site organizational changes may arise out of an emerging strategy of provisioning longer duration campsite locations with stone raw material as Middle Archaic populations intensified use of patchy subsistence resources in the foothills and piedmont east of the Appalachian Mountains. In contrast to the tool transportability and raw material conservation strategies evident from earlier assemblages, Late Middle Archaic and Late Archaic bifaces exhibit a decrease in lithic economizing and reuse behavior. This paper illustrates the potential error of assuming analytical equivalency of biface technology throughout the Archaic and questions the utility of direct metric index comparison. Controlling chronological variation in stone tool use-lives and raw material reduction strategies is a necessary prerequisite to linking patterns in stone tool assemblages with broader prehistoric subsistence and settlement organization caused by climate change.

Thakar, Heather (Temple University)

[245] *Foraging Ancient Landscapes: Seasonal and Spatial Variation in Prehistoric Exploitation of Plant and Animal Food Resources on Santa Cruz Island, California*

In recent years, burgeoning paleoethnobotanical research on the Northern Channel Islands of California has challenged long held assumptions regarding the nature of aboriginal patterns of plant exploitation and helped refine our understanding of prehistoric Chumash subsistence economies. Yet, little effort has been made to systematically integrate paleoethnobotanical analysis and datasets with normative subsistence studies, which tend to focus on the abundant (and highly visible) shellfish remains that dominate archaeological assemblages on the Northern Channel Islands. I contend that understanding how the Island Chumash moved about and exploited prehistoric landscapes requires analysis of all subsistence remains—marine and terrestrial, faunal and floral—from multiple sites, site types, and stratigraphic contexts. In this article, I integrate chronological control on century and seasonal timescales with the analysis of well-preserved macrobotanical and faunal assemblages from multiple locations on Santa Cruz Island. These data reveal that variation over relatively short temporal and spatial scales structured foraging decisions and produced persistent and identifiable patterns in the archaeological record. In this analysis, reconstruction of seasonal and spatial variation in quantity and array of primary plant and animal food resources exploited contributes to effective assessment of many facets of land use and mobility.

[202] *Discussant*

Tharalson, Kirsten (University of Oklahoma)

[115] *Butchering Patterns & Seasonality of the Certain Site, Western Oklahoma*

The Certain Site is a Late Archaic site in Western Oklahoma that contains at least five arroyo bison trap kills totaling over 200 animals. Numerous bison bones from these kills exhibit evidence of butchering—cut marks, green bone breaks, embedded tools. The butchering sequences associated with each kill was identified through thorough examination of these butchering marks from the site's various arroyo kill localities. Combined with previously identified seasonality estimates for each kill, I determine whether the seasonality of kill correlates with a distinct butchering pattern. This data is also compared with the butchering patterns used at various other bison kill sites from the region to identify any possible correlations between seasonality of kill and butchering pattern used throughout Southern Plains bison kill sites.

Ther, Richard [146] see Kvetina, Petr

Thies, Meagan (Illinois State University)

[186] *Moderator*

Thomas, David (American Museum of Nat History)

[28] *Discussant*

Thomas, Jayne-Leigh (Indiana University), April Sievert (Indiana University), Teresa Nichols (Indiana University) and Anne Pyburn (Indiana University)

[30] *Learning NAGPRA and Teaching Archaeology*

In 2014 and 2015, researchers from Indiana University received National Science Foundation funding through their Cultivating Cultures of Ethical STEM initiative to study how repatriation is taught and learned, and to work toward interventions to improve the resources available. The "Learning NAGPRA" project prioritizes a more thorough understanding of the challenges and bottlenecks in preparing professionals for work related to NAGPRA and repatriation. It also seeks better ways to assist learners at different points throughout their education on issues relating to professional ethics, working with human subjects, building cultural competency and relationships with Native American communities, and NAGPRA consultation and compliance. The project hopes, in collaboration with tribal colleges and participants, to look beyond traditional Euroamerican pedagogy, to find methods that speak to both indigenous and non-indigenous students. The first year focused on background research and project planning and aimed to understand the perspectives and priorities of students and educators in learning and teaching about ethics and more specifically NAGPRA in anthropology and museum studies-related programs.

Thomas, Jayne-Leigh [112] see Nichols, Teresa

Thomas, Jonathan and Tyler Perkins (University of Iowa)

[112] *Shell Bead Production at Cahokia*

Cahokia (c. 1050–1400 A.D.) was the largest precolumbian city in North America and had far-reaching influence across the Mississippian world. Initially considered a chiefdom, recent reappraisals have cast doubt on the applicability of traditional social evolutionary models to Cahokia, suggesting it is best understood on its own terms as a historical phenomenon. One significant facet of the Cahokian prestige goods economy involved the production, distribution, and circulation of large numbers of shell beads, an important component of mortuary practices. This analysis examined 10,000 of the estimated 60,000 shell beads recovered from the Mound 72 (“birdman”) burial at Cahokia. Beads were measured for diameter and thickness, and coded for a number of traits including shape, perforation type, and use-wear. Low standard deviations in bead dimensions are indicative of standardization and batch production, resulting in thousands of disc-shaped shell beads that are nearly identical in size. This suggests that the production of beads at Cahokia and surrounding sites was an ongoing, highly-organized, labor-intensive industry. We conclude by exploring the implications of this process for labor organization, including potentially gendered and age-related aspects of bead production, and more generally for our understanding of cultural complexity at Cahokia and surrounding areas in the American Bottom.

Thomin, Mike

[260]

The Best Days at FPAN are Out of Sight: Public Archaeology Airwaves of Unearth Florida and the DARC Geotrail

The Florida Public Archaeology Network has created a variety of unique projects throughout the past decade of its existence. Two of these projects called Unearth Florida and DARC Geotrail used “airwaves” through the medium of radio and the technology of GPS satellites as a way to educate the public about Florida’s archaeological heritage and to promote archaeotourism. Unearth Florida is a radio program broadcast Florida public radio NPR member stations designed to enhance the public’s understanding and appreciation of Florida’s archaeological heritage. DARC Geotrail is a project that uses the worldwide GPS based scavenger hunt game of geocaching as a way to promote responsible site visitation and tourism to historic and archaeological sites in Northwest Florida. This paper reflects on some of the successes and challenges of creating and maintaining both these projects using “airwaves” over the past four years.

Thompson, Katlynn (CSUN), Jessica Levy, Diane Newburry, Sheena Owens and Ann Peters

[63]

Fifty-Year-Old Boxes Illuminate the Middle Horizon in Ica, Peru: Textile Conservation and New Research Opportunities

As part of a Practicum in Analysis and Conservation of Organic and Textile Artifacts, class participants worked with materials recovered in salvage excavations between 1955 and 1975, which form part of the collections at the Museo Regional de Ica “Adolfo Bermudez Jenkins.” We carried out documentation and preliminary interventions to improve preservation of textiles from a mortuary context, as well as miscellaneous artifacts with unknown provenience, diverse in materials and techniques. Here, we present the problems and opportunities of “excavating the museum” and discuss our conservation decisions and the information recovered. Each box contained far more material than expected, and a variety of artifacts and conditions provided the class with experience in a range of conservation strategies. Many artifacts combined diverse organic materials with some textile components; a set of hairpieces, apparently similar, provided several surprises. Although the mortuary assemblage had been separated from the human remains, the process of separating and rehousing wadded and folded textiles provided information on gender and social status. Our conservation work generated an expanded list of cataloged artifacts and new storage requirements, leading to a collection management issue as well as opportunities for further research.

Thompson, Amy [64] see Kirk, Scott

Thompson, Victor (University of Georgia) and John Turck (Geoarcheology Research Associates)

[157]

Human-Environmental Dynamics of the Georgia Coast

This paper synthesizes and evaluates settlement and subsistence patterns in relation to landscape change for the entire prehistoric period on the Georgia coast. The dynamic coastal processes of the region have altered the topography and distribution of resources, including those important to humans. These processes were neither uniform in space nor time, with variations leading to the creation of micro-habitats. We assess these habitats individually and as part of a complex whole, to better elucidate the nature of human-environmental interactions. Understanding these complex relationships aids in our understanding of the social trajectories of the coastal groups, and people’s environmental impact and legacies on the ecosystem. In addition to our synthesis, we include new research such as locational data and a comprehensive radiocarbon date database. We also use our research as a departure point to discuss the future of humans along changing coastlines. We argue that past peoples dealt with similar coastally-related issues as today, such as sea level fluctuations or changes to once productive resources. We need to convey our knowledge on these human-environmental interactions to the public, including policy-makers, not just to exhibit the usefulness of archaeology, but also to transform society for the better.

Thompson, Jessica (Emory University), Alex Mackay (University of Wollongong), Sheila Nightingale (City University of New York), Flora Schilt (University of Tuebingen) and David Wright (Seoul National University)

[211]

The Central African Middle Stone Age in Context: Comparisons of Technological Adaptations

The Late Pleistocene Middle Stone Age (MSA) records of southern and northern Africa increasingly provide evidence for diversity in technological systems, with both exhibiting early examples of standardized stone tool production achieved through complex manufacturing sequences. This superficially implies a long-term trend toward greater complexity in MSA technology at a continental scale. However, within both regions, various lithic elements received different emphases over time and space—potentially in response to dramatic shifts in climate. New data from the central African record add perspective to how regional expressions of the Late Pleistocene MSA can be understood. Stone artifact assemblages from Karonga, Malawi, persistently lack the variety and complexity demonstrated to occur elsewhere in Africa at the same times, in spite of similar lithic raw material availability. Because the region experienced considerable variability in Late Pleistocene precipitation and vegetation regimes, climate change was not a universal determinant of technological change in the MSA. These data from the central African record provide an essential avenue for exploring new hypotheses about the roles of environmental risk and demography in shaping the expression of MSA technology across the continent, not just at a local scale.

Thompson, Amy (University of New Mexico) and Keith M. Prufer (University of New Mexico)

[236]

Analyzing Ancient Maya Settlement Patterns through the Geochemical Analysis of Obsidian Artifacts in Southern Belize.

This poster examines the distribution of obsidian across space and time among two Classic Period Maya centers, Uxbenká and Ix Kuku’il, located in the southern foothills of the Maya Mountains, Belize, Central America. Data from portable x-ray fluorescence analyses at Uxbenká suggests that neither the period of occupation, distance of a settlement group to the site core, nor the social status of group residents impacted the availability of obsidian source-group material, suggesting Uxbenká residents all had access to the same obsidian materials throughout the history of the polity. This study expands on the initial research to examine if differential access to obsidian sources varies between the sites Uxbenká, and its neighbor, Ix Kuku’il. Furthermore, it focuses

on how the geospatial location of social groups and temporally controlled occupation periods impact access to obsidian. Discussions of social groupings include scales of households, neighborhoods, and districts defined by geospatial analyses. All obsidian artifacts from both Uxbenká and IxKuku'il were geochemically analyzed using a portable x-ray fluorescence to determine the source of each individual artifact. Time depth is added to this study through high-resolution radiocarbon dating associated with the obsidian materials among the various household groups at both ancient centers.

Thornton, Erin (Washington State University), Kitty Emery (Florida Museum of Natural History), John Krigbaum (University of Florida) and Camilla Speller (York University)

[134] *Biomolecular Approaches to Documenting Ancient Maya Turkey Husbandry and Use*

The turkey (*Meleagris gallopavo*) is the only domesticated vertebrate to originate from North America. Accurate reconstructions of turkey husbandry and use are thus critical for understanding the domestication process in the ancient Americas. Isotopic and genetic (aDNA) research has yielded substantial insights into the history of turkey use and domestication in the American Southwest, but such methods have not been widely used in Mesoamerica to date, despite the fact that all modern domestic turkeys descend from birds originally domesticated in Mexico during pre-Colonial times. To address this disparity, we have conducted isotopic and genetic analyses on turkey remains from ancient Maya archaeological sites to evaluate: 1) when and where non-local domestic turkeys (*Meleagris gallopavo*) were first introduced to and adopted by the ancient Maya, 2) whether the ancient Maya also reared captive or tame populations of the local ocellated turkey (*Meleagris ocellata*), and 3) the utility of stable isotope ratios to distinguish between wild and managed turkey populations. Our results suggest isolated early (pre-A.D. 1000) introductions of turkeys to the Maya region. We further conclude that wild and managed/domesticated turkeys maintained distinct diets that may be determined through light stable isotope analysis.

Thornton, Erin [235] see Phillips, Lori

Thress, Jessica [138] see Tankersley, Kenneth

Throgmorton, Kellam (Binghamton University)

[65] *Estimating the Scale of Social Groups in the Ancient Southwest, A.D. 650–900*

The scale of social groups (such as households, lineages, moieties, factions, and clans) can have a profound effect on the development of political hierarchies. The household is an important building block of larger sociopolitical formations. Similarly, the village is theorized as an important political entity that is sometimes characterized by unequal power relations among individuals and groups. In this poster, I explore the scale of households, the architectural spaces they inhabited, and how these spaces were organized into different kinds of villages in the ancient U.S. southwest. My evidence is drawn from rock art depicting social groups, (the Procession Panel at Comb Ridge, UT) and architecture (villages built between A.D. 750–900 in the Central Mesa Verde region). I argue that a focus on average sizes and social integration has overlooked the importance of disparities in scale and social difference in early village societies, which are important factors in the development of inequalities and differential access to power.

Thrower, Alexandra [216] see Follensbee, Billie

Thunen, Robert

[213] *Fort Caroline's Legacy: Surveying for a Missing Fort*

This paper summarizes the history and archaeology of Fort Caroline, a French outpost established in North Florida in 1564, then captured and occupied by the Spanish who renamed it Fort San Mateo. To date only one French artifact has been identified for the 16th century time period and it was recovered from a dredge spoil pile along the river. Several archaeological surveys have been undertaken both within National Park property and on adjacent private property along the south bank of the St. Johns River. Survey results have identified a number of prehistoric and historic sites but no evidence for the fort, leading some to suggest that the fort was located on a river system to the north of the St. Johns. Currently, we are examining new locations on the St. Johns River based on environmental data and Spanish documents.

[213] *Chair*

Thurber, Hali (University of Maryland) and Steven Wernke (Vanderbilt)

[281] *A Network Analysis of Embedded Pathways at Mawchu Llacta, Perú (1591–1617 C.E.)*

This paper investigates the occupation of a planned 16th century Spanish colonial resettlement named Santa Cruz de Tute, hereafter referred to as Mawchu Llacta. My analysis incorporates data compiled for the Proyecto Arqueológico Tuti Antiguo (PATA), with a particular focus on colonial census records from 1591, 1604, and 1617, which detail land tenure and livestock holdings. I argue that the construction of a computer-based representation of pathways in ArcGIS platform contributes to the delimiting of an historical and ecological context in which cultural activity is dialectically engaged in the transformation of an environment over time. Drawing on historical ecology, I demonstrate that the physical pathways embedded in the landscape are a product of human-environment relations, and that they reveal tangible evidence of a sustained use of land over time from a space of habitation to a space of subsistence.

Thurston, T. L. (SUNY Buffalo)

[75] *A Question of Place: Economies and Intimacies in Early Sweden's Smallest Upland Communities*

Can we understand the connections between the state, farming economies, and the lived experience of smallholders in past societies? Using archaeological examples from the smallest smallholdings—crofts on marginal lands in northern Europe—the view of land as a rare, precious, and highly managed resource is examined. Despite the still-pervasive materialist notion that smallholders are passive mechanisms with shortsighted, self-defeating land management strategies, anthropologists have repeatedly demonstrated that many similar pastoral commons are carefully managed for the long term, providing high consumable yields and high income for the state. Furthermore, can we 'populate' the past of smallholder communities to understand their real role in the civic and social life of the state? Curing the materialist notion of the machinelike peasant requires examination of the real-life impacts of hard work, marginality, and government demands through archaeological and documentary data. This can unite the fact that the crofts, as an aggregate whole, were vital to a healthy state economy with the understanding that they also hold traces of a community life that was rich with organizational skills but also personal joy and crisis.

Tica, Cristina (University of Nevada Las Vegas)

[24] *Across the River: Romanized Barbarians and Barbarized Romans on the edge of the Empire. Bioarchaeology of Romania in Late Antiquity (300–600 C.E.)*

The goal of this research project is to examine differences in overall health between two groups that have been characterized in the literature as Romans and “barbarians.” The research questions addressed using skeletal remains are about how the daily life of people under Roman-Byzantine control compared to that of their neighbors, the “barbarians” to the north. Comparing two contemporaneous populations from the territory of modern Romania—and dating to the 4th–6th centuries CE, the study will examine health status and physical activity levels. One collection comes from the territory under Roman-Byzantine control, the site of Ibida (Slava Rusă) from the Roman province of Scythia Minor, and the other originates from the Târgșor site, located to the north of the Danube frontier, in what was considered the “barbaricum.” This study seeks to explore whether these labels given to groups of people affected them differentially. Separated by a definite frontier, the Danube River, meant to (at least ideologically) segregate them to their divided worlds, these populations might have been more interconnected than the carefully promulgated imperial doctrine would have us believe. Their bones, as first-hand witnesses to their lifestyles, will help elucidate the degree of similarity or difference their existence actually entailed.

[24] *Chair*

Tierney, Aisling (University of Bristol)

[280] *Discoveries in Hatteras: Embedding Sustainability Thinking into Community Engagement*

In 2015, University of Bristol students elected to join a sustainability education pilot project run in conjunction with the Croatoan Archaeology Society. The project was embedded into existing excavations at the early contact Native American site on Hatteras Island, Outer Banks, North Carolina. It focused on the larger environment, culture and ecosystems of the region and how they were affected by cultural exchange and the introduction of new technologies from the seventeenth century. Students designed and delivered a number of short interactive learning sessions for the local community and school children. The former was delivered within community engagement events co-organized by the students. The latter shaped University research learning for a younger audience, all within an archaeological context involving hands-on learning. Through learning, reflection and action, students became co-creators of their own learning. This project serves as an example of engaged research as it works with the potential users of the research, where local knowledge is valued and incorporated into academic research. By valuing local expertise and inviting participation, public engagement opportunities are enhanced. This paper will explain the three complimentary elements employed successfully within the sustainability education project: framing learning and reflection; sharing and engaging; and inviting knowledge.

[280] *Chair*

Tifental, Emilia (University of Montana), Anna Marie Prentiss (University of Montana) and Meradeth Snow (University of Montana)

[185] *The Bridge River Dogs: A Comprehensive Interpretation of aDNA and Stable Isotopes Analysis Obtained from Dog Remains*

Excavations at the Bridge River site have been on-going since 2003, increasing our understanding of the communities that inhabited the Middle Fraser Canyon, British Columbia, over 1,000 years ago. The most recent excavation at Housepit 54 in the summer of 2014 supplied further data regarding relationships between people and their dogs. Dogs are well documented in the Middle Fraser Canyon through both archaeological excavations and traditional knowledge. A household's possession of a dog has been linked to other prestigious materials, and therefore been interpreted as an indicator of inter-household wealth and status. The present study was aimed at further investigation of the dog remains and the lives of the individuals that kept them. Ancient DNA analysis was conducted on a variety of dog remains from different occupations from Housepits 11, 16, 20, 24, and 54. Comprehensive stable isotopes analysis of the same samples, with the addition of corresponding faunal remains for dietary comparison, was also completed. The study revealed further evidence on the complex nature of the socio-economic system and how it evolved in response to a changing environment at Bridge River.

Timpany, Scott [210] see Mainland, Ingrid

Todd, Lawrence [22] see Kappelman, John

Todd, Carrie and Gabrielle Vail

[92] *Weaving Technologies and Textile Production: A Case Study from the Northern Maya Lowlands*

Ethnohistoric sources point to the importance of textile production in the northern Maya lowlands in the years immediately preceding and following the Spanish conquest. Archaeological evidence of textiles and their creation comes from a variety of sources, including fragments of cloth recovered from the Sacred Cenote at Chichén Itzá; spindle whorls found in domestic and ceremonial contexts at Chichén Itzá, the nearby cave site of Balankanche', and other archaeological sites in the vicinity; and almanacs concerning the making of cloth recorded in the Maya screenfold codices. This poster examines these interrelated lines of evidence to develop a picture of prehispanic Maya textile manufacture in the northern region, focusing on questions such as gendered facets of production, quotidian versus ritual aspects of the production process, and what weaving and associated tasks tell us about state-level versus agrarian ideologies.

Todd, Brenda (National Park Service)

[186] *Discussant*

Todd, Lawrence (GRSLE) and Kyle Wright (Shoshone National Forest)

[267] *A CLG in the Wilderness: Cooperative Local Preservation in the Greater Yellowstone Ecosystem*

The Shoshone National Forest (Northwestern Wyoming) encompasses some of the most remote, inaccessible landscapes in the continental United States with 56% (1.4 million acres) designated Wilderness. Documenting, researching, and managing heritage resources in these Wilderness areas provides special challenges. A fundamental issue is that little basic archaeological inventory has been conducted and working in the area is logistically difficult. Over the last several years, a partnership between the Park County Historic Preservation Commission (PCHPC), a local certified local government (CLG) entity and the Forest has focused on developing cooperative approaches for addressing the impacts of wild land fire, limited law enforcement presence, and a wide spread public perception that artifact theft in the back country will go un-noticed. By accessing a number of funding sources and extensive volunteer

commitment, the PCHPC completed 30-40 days of Wilderness fieldwork a year for the last five years. Of fundamental importance has been the unambiguous documentation that these remote landscapes contain a very rich and complex archaeological record in both the montane and alpine zones. While management of contemporary Wilderness settings focuses on humans as temporary visitors, the prehistoric archaeological record demonstrates that in the past, human land use was much less transient.

Toizumi, Takeji [173] see Takamiya, Hiroto

Tokovinine, Alexandre (Peabody Museum, Harvard University)

[59] *"Bundling the Sticks": Tallies in Classic Maya Inscriptions*

This presentation addresses a set of references to "sticks" in Classic Maya inscriptions, which have been traditionally interpreted as weapons. The available contexts, however, indicate that "sticks" were involved in tribute payment transactions. Although there is no archaeological evidence of these presumably perishable wooden items, the author highlights some visual and material data that support the use of tallies by the Maya. The discussion then centers on less straightforward textual contexts of "sticks" and the implications of the tally hypothesis for our understanding of Classic Maya accounting practices.

[158] *Discussant*

Tokovinine, Alexandre [212] see McNeil, Cameron

Tomas, Helena

[257] *Following the Early Maritime Routes from the Adriatic to Greece*

During Late Bronze Age it was not unusual to find objects of Mycenaean origin at any part of eastern and central Mediterranean. The only area that seems to have been omitted from Mycenaean naval routes was the eastern Adriatic coast and its hinterland. However, during earlier times that coast was not as marginal to the Aegean world. The period in question was Early Bronze Age when Cetina Culture saw its birth in the valley of the eponymous river in the hinterland of the eastern Adriatic coast. The pottery typical of the Cetina Culture subsequently spread to the Italian and northern Adriatic coasts, central Balkan Peninsula, Albania, and the Aegean. It is fairly safe to suggest that such a wide radius of pottery dissemination was a product of an economic exchange. Bronze objects discovered in the Cetina tumuli leads us to conclude that metal was obtained through trade, and that the Cetina people obviously traded their pottery (or its contents) for metal. The distribution of the Aegean sites with imported Cetina pottery suggests that they lay along a route by which the Cetina people travelled towards Aegean sources of raw materials, perhaps even towards the Laurion mine itself.

Tomaskova, Silvia (UNC Chapel Hill)

[248] *Discussant*

Tomasto Cagigao, Elsa [99] see Muro, Luis

Tomczyk, Weronika (University of Warsaw)

[205] *Animal Exploitation at Castillo de Huarmey Site, Northern Coast of Peru: The Case of South American Camelids*

The Castillo de Huarmey archaeological expedition has been working since 2010 and so far, faunal remains from 3 different contexts were analyzed. Although the zooarchaeological analysis is still not completed, the importance of South American Camelids seems to be significant. In all of the contexts, remains of these species predominated. Formative settlement delivered small assemblage, but with high numbers of consumption patterns. Dated for Early Intermediate Period and Middle Horizon palatial complex contained few complete skeletons of camelids' sacrifices, however they were very poorly preserved. The upper layers of main Wari elite mausoleum were filled with a plethora of animal sacrifices. Other species remains such as sea lion (*Otaria flavescens*), white-tailed deer (*Odocoileus virginianus*) or condor (*Vultur gryphus*) were encountered, but they represented mostly single offerings, not as abundant as camelids. This ratio could suggest the increasing of camelids importance among the time and prevalence of their exploitation at this part of North Peruvian Coast.

Tomka, Marybeth (TARL, University of Texas at Austin) and Jonathan Jarvis (TARL, University of Texas at Austin)

[265] *Texas Archeological Research Laboratory: Everything in Texas is Bigger*

The Texas Archeological Research Laboratory (TARL) was formally established at the University of Texas in 1963 to preserve an ever growing accumulation of records and collections documenting the unique history and prehistory of Texas for research, teaching and public interest. Acquisition of the collections and archive began ca. 1918. University excavations under the Works Projects Administration, and later the federal River Basins Survey salvage program for sites impacted by dams and reservoir construction greatly expanded the records and collections. Today, work done by Cultural Resource Management archeologists continues to add to the collections and refine our understanding of Texas archeology. Interconnected with TARL's long history is the specter of our legacy collections. In order to draw more researchers to our collections we have embarked on a multi-year plan of prioritization and rehabilitation of our most highly regarded holdings. TARL's holdings document the history of archeological research in Texas and the archeologists that founded Texas archeology; revitalization of these collections can ultimately create a better and more complete picture of the cultural landscape. The process has begun to attract volunteer labor to rehabilitate collections, update our collections care, and digitize the massive amount of paper data.

Tomkins, Peter [79] see Vandam, Ralf

Toney, Joshua (Garcia and Associates)

[23] *Traces of Carib Ancestors: The Incised and Punctate Horizon Style in Eastern Amazonia*

The Incised and Punctate Horizon style is a widespread late prehistoric ceramic series known throughout Eastern Amazonia. A variety of subseries are known from coastal and highland Columbia, coastal Venezuela, the Orinoco, the Antilles, the Guianas, the Southern Amazon, and the Lower Amazon, including Santarém. The Incised and Punctate horizon style may represent a second wave of Carib-speaking chiefdoms spreading throughout the tropical lowlands between A.D. 1000–1500. This paper presents evidence from the Southern Amazon, where Incised and Punctate ceramics are present at several late prehistoric sites along southern portions of the Xingu River, known locally as the Upper Xingu. Various styles are found among Upper Xingu ceramics similar in decoration to those from areas as close as Santarém and as far as Lake Valencia. Similar technological attributes associated with the spread of the Incised and Punctate horizon are also present in Upper Xingu ceramics including the use of sponge-spicule temper. Finally, the presence of Carib-speakers in the Upper Xingu, possibly associated with specific late prehistoric settlements and Incised and Punctate ceramics, provides some evidence for late Carib movement into the region and their possible association with the Incised and Punctate Horizon style.

Toney, Elizabeth (Gila National Forest, Silver City Ranger District) and Marilyn Markel (Aldo Leopold High School)

[267] *The Dragonfly Petroglyph Site: A Teaching Place for Us All*

The dragonfly is a subject of intrigue around the world and many different cultures have ascribed unique meanings to its behaviors. The Dragonfly petroglyph site located on the Gila National Forest represents an interesting teaching place for cultural preservation and traditional values and beliefs. It also demonstrates the collaborative opportunities for the interpretation of this special place. Collaborative efforts between the Gila National Forest, Aldo Leopold High School, New Mexico SiteWatch, and representatives from the Zuni Cultural Resource Advisory Team have begun to develop interpretive signage at the Dragonfly Petroglyph site in celebration of the 50th anniversary of the National Historic Preservation Act (NHPA).

Toohy, Jason (University of Wyoming)

[102] *Initial Investigations at the Multicomponent Cajamarca Site of Callacpuma*

Here I present the results of an initial season of fieldwork at the multicomponent Cajamarca site of Callacpuma (Qayaqpuma). Cerro Callacpuma is a large site located along the northeastern edge of the Cajamarca basin. The multicomponent site encompasses a number of architectural and other spatial zones, arrayed along the 2.5 km spine of the ridge and on its north and south slopes. Initial fieldwork focused on survey and mapping of the architectural core of the site, located along the Inca trunk road, test excavation within the site's cave complex and architectural zones, and systematic survey and recording of a sample of the site's extensive corpus of rock art. Results indicate the presence of a large site area that was occupied and utilized at least periodically from Late Huacaloma (~500 B.C.E.) through to the Colonial Period (~AD 1550) with a possible earlier archaic component associated with the rock art.

[102] *Chair*

Topic, John (Trent University)

[56] *Discussant*

Torney, Blair [187] see Martin, Paul

Torres, Paola [26] see Demarest, Arthur

Torres, Josh (National Park Service) and Johshua Torres (National Park Service)

[50] *Contextualizing Tibes and the Local Landscape*

This paper provides archaeological evidence for the local landscape surrounding the Ceremonial Center of Tibes (ca. 500 and 1300 A.D.) on the south-central coast of Puerto Rico. Settlements identified during recent archaeological survey of the micro-region surrounding the site, in conjunction with archaeological data from well excavated sites in the area, is presented to spatially and temporally contextualize recent findings at Tibes. Settlement variability is characterized and local temporal associations established through an examination of vessel assemblages from adjacent settlements. Ultimately, this paper presents a dynamic picture of the ceramic age community that supported Tibes and offers insight and context for forthcoming research.

Torres Orjuela, Saul [50] see Archila Montanez, Sonia

Torres-Estévez, M. Fabiola [169] see Pérez-Roldán, Gilberto

Torvinen, Andrea (Arizona State University)

[41] *Petrographic Analysis of Decorated Ceramics from La Quemada, Zacatecas, Mexico*

The hilltop center of La Quemada in the Malpaso Valley of Zacatecas, Mexico, was the focal point of one of several polities that developed along the northern frontier of Mesoamerica during the Epiclassic Period (A.D. 500–900). Northern frontier polities are known to have interacted due to their shared material culture (i.e., patio-banquette complexes, colonnaded halls, and the exchange of obsidian and shell products), but the mechanism(s) of this interaction are not fully understood. Ceramic wares, such as red-on-buff, incised-engraved, and resist, are widely distributed across the northern frontier and provide a means of analyzing past social networks. Were decorated ceramics recovered from La Quemada local variations of a shared regional ideology or were some or all produced in other polities and consumed by La Quemada residents? This poster begins to answer this question by reporting on a petrographic analysis of decorated ceramics recovered from La Quemada. The results of the analysis include the description of a series of paste groups of likely local or, in the case of the rare decorated types, possibly nonlocal origin. Ultimately, the proportion and distribution of nonlocal ceramics within La Quemada will help to establish one component of the northern frontier social network.

[41] *Chair*

Toussaint, Mark (University of Nevada Las Vegas) and Piotr Włodarczak (Polish Academy of Sciences, Institute of Archaeology)

[24] *Temporal and Spatial Liminality in Early Bronze Age Central Europe: A Bioarchaeological Analysis of a Mierzanowice Culture Cemetery*

The cemetery at Szarbia in southeastern Poland is a Mierzanowice culture cemetery, from which 45 individuals have been excavated. The skeletal remains from this site had yet to be examined or published prior to this study. The Mierzanowice culture conforms to the "Borderlands" theme well in terms of its many modes of liminality. It is temporally liminal in that it is an Early Bronze Age culture, transitional between Late Neolithic and Bronze Age paradigms. It is culturally liminal in that modes of subsistence typically associated with the Late Neolithic and, later, the Bronze Age are both practiced by this culture at different points in time; furthermore, the increased social stratification typically associated with the Bronze Age does not seem to appear in the Mierzanowice culture to the same degree as its contemporaries. It is also spatially liminal, existing between and on the periphery of several dominant Bronze Age paradigms—e.g., Únëitice to the west and Otomani-Füzesabony to the south. This bioarchaeological study examined the biological realities of Mierzanowice liminality; preliminary analyses find overall rates of disease and stress indicators to be consistent with Late Neolithic cultures in the region, but rates of trauma caused by interpersonal violence to be lower.

Tox, Carlos Efrain [4] see Rivas, Alexander

Toya, Christopher [266] see Edgar, Heather

Toyne, Jennifer Marla (University of Central Florida) and Nathan Esplin (University of Central Florida)

[207] *Analyzing Skeletal Manifestations of Pre-Columbian Tuberculosis in the Northeastern highlands of Peru*

The current understanding of Pre-Columbian tuberculosis is unclear, and in several geographic areas very little is known. To date most knowledge of ancient tuberculosis comes from isolated case studies. These studies are informative as they consider the individual in question but they offer little insight into the demographic or social impact of tuberculosis. This population-based study describes osteological lesions consistent with possible tuberculosis in 15 individual skeletons excavated from the Chachapoya site of Kuelap, Amazonas, in the northeastern highlands of Peru. Evidence of advanced spinal tuberculosis is present in several individuals, and lytic lesions of the lower lumbar vertebra and sacroiliac and sternomanubrial joints are evident in nearly every case. Both adult males (9.7 percent) and females (13.8 percent) presented skeletal lesions but there was only one juvenile identified. With growing scholarship in the Chachapoyas region it is significant to record so many cases at Kuelap interred in different burial contexts, but this sample also clearly indicates tuberculosis was present both before and after Inca occupation. Given that skeletal tuberculosis is only involved in a few percent of tuberculosis cases, the number and pronounced degree of skeletal pathology present suggest that tuberculosis likely had a significant impact on Chachapoya health.

Trabert, Sarah (University of Oklahoma), Sunday Eiselt (Southern Methodist University), David Hill (Metropolitan State University of Denver), Jeffrey Ferguson (University of Missouri Research Reactor) and Margaret Beck (University of Iowa)

[123] *Characterizing Micaceous Vessels on the Central High Plains*

Ceramic vessels made from micaceous materials appear at many Protohistoric Dismal River (Ancestral Apache; A.D. 1600–1750) sites in Kansas, Nebraska, Colorado, and Wyoming. Dismal River groups were participants in large social and economic exchange networks linking them to other peoples on the Plains and U.S. southwest. Previous scholars considered the micaceous pottery recovered from these Central High Plains sites as evidence of interaction with northern Rio Grande pueblos and assumed that all micaceous ceramics originated in northern New Mexico. Our recent analyses, including macroscopic evaluation combined with petrography and neutron activation analyses, indicate that only a small number of Dismal River micaceous ceramics are derived from New Mexico clays. The remaining ceramics were likely manufactured using materials available on the High Plains, specifically in Colorado and Wyoming. These new data provide potential insights into Dismal River social networks and seasonal mobility patterns as people traveled between the Western and Central Plains to acquire resources.

Trachman, Rissa (Elon University)

[93] *Investigations at the Site of Dos Hombres and its Hinterlands: A Multiscale Perspective of Ongoing Investigations*

Ongoing investigations at the site of Dos Hombres are being conducted towards a multiscale perspective. Investigations in the hinterlands of Dos Hombres have revealed much about household and community organization there based on architectural, material culture, and water management feature remains. Evidence in the civic ceremonial center of Dos Hombres is being gathered towards a greater understanding of its role economically in the region, its occupation history, and socio-political organization. The goal is to articulate these data in order to have a holistic understanding of the ancient Maya at Dos Hombres and northwestern Belize. The current investigations at Dos Hombres are focused in the northern plaza, a very public space that could be assumed to have been a place of commerce, public ritual and sacred space.

Traslaviña, Teddy Abel [174] see Wernke, Steven

Tratebas, Alice (Bureau of Land Management)

[175] *Landscape, Rock Art, and Ceremonial Game Drives*

Early Hunting petroglyphs in a Black Hills canyon depict hunting situations and ceremonies. A loop-line motif, that is unique to this rock art tradition, signifies drive lines and trap structures. Loop-lines occur only at canyon locations that are appropriate settings for trap structures. The canyon starts on the margin of a basin that provides good grazing. Entry to the canyon is funnel-shaped like the V-shaped wings of hunting traps. Recent discovery of a cairn drive line that utilizes another bedrock gap leading out of the grassy basin reinforces the interpretation of the rock art canyon as a trap location.

Traval, Sarah E [197] see Matney, Timothy

Travassos, Daiana [263] see Iriarte, Jose

Traxler, Loa (University of New Mexico)

[58] *A New Bak'tun—Maya Archaeology, Stewardship and Exhibitions Beyond 2012*

Mindful stewardship of cultural heritage is a collaborative and holistic effort, often carried out in changing social contexts and facing steep challenges. As archaeologists, we communicate our understanding of the past and the broad implications of archaeological research to the diverse publics that we serve. Drawing from recent work to organize and present the "Maya 2012: Lords of Time" exhibition, this presentation will highlight approaches taken to contextualize pre-Columbian Maya cultural traditions and to engaging diverse communities in presenting Maya heritage for modern audiences.

[212] *Discussant*

Trein, Debora (University of Texas at Austin)

[27] *Geoarchaeology at La Milpa, Belize: An Ancient Maya Community and Its Temple*

This paper discusses the preliminary results of geochemical and micromorphological analysis of sediments at Structure 3, a monumental temple structure at the site of La Milpa, northwest Belize. This analysis forms part of a project that aims to examine the impact of a community in shaping the functions of monumental architecture. Artifact and architectural evidence gathered at Structure 3 have indicated that the Late Classic period (550–850 C.E.) constituted a time of intense access and use of the areas surrounding the temple structure. Nevertheless, this dataset was found to be insufficiently fine-grained to enable the identification of specific types of activities, necessary in understanding how Structure 3 functioned in relation to its community. In order to identify and differentiate between discreet activity areas geochemical characterization of sediments through ICP-MS and ICP-AES, and sediment micromorphology were employed in 130 loose sediment and 20 sediment core samples taken from and around Structure 3. Both these techniques are considered to be highly successful in the study of activity areas in the archaeological record, but have had a relatively limited history of application in the Maya Lowlands.

Treloar, James and David Chicoine

[56] *Early Horizon Warfare and Defensive Architecture in the Lower Nepeña Valley, Coastal Ancash*

Results of systematic surface surveys and excavations at Early Horizon sites in the lower Nepeña Valley indicate the increased importance of armed conflicts and intercommunity violence, especially during the second half of the first millennium B.C. Although scholars agree that warfare likely played a major role in shaping local sociopolitical and ritual landscapes during the Early Horizon, little is known about the nature of warfare and associated defensive strategies in Nepeña. This paper presents results of recent fieldwork carried out at the complexes of Caylán, Samanco, and Huambacho. Data from pedestrian surveys and excavations are combined to analyze the architectural and spatial features of defensive structures. Spatial data are analyzed using Geographic Information Systems (GIS) tools to shed light on the scale and intensity of Early Horizon conflicts, the type of military strategies deployed, and the potential coordination of defense between coastal settlements.

Tremayne, Andrew (National Park Service)

[217] *Maritime Resource Intensification and Lithic Technological Organization at Iyatayet, Cape Denbigh, Alaska*

One of J.L. Giddings' most important contributions to Arctic archaeology was the discovery and definition of the archaeological cultures known as the Denbigh Flint complex and Norton tradition from the stratified Iyatayet site. There, Giddings produced a descriptive analysis of each culture's tool forms and speculated on their lifeways. His work, however, was designed primarily to answer typological questions rather than processual or adaptive ones. Over the past seventy years, few studies revisited Iyatayet to verify Giddings' results or address new questions. One of the only known stratified coastal sites, Iyatayet remains an excellent case for understanding the development of Arctic maritime adaptations. This paper discusses recent re-analyses of Iyatayet's Norton and Denbigh stone tool collections, coupled with recently excavated samples, undertaken to test Giddings' findings. Many of his original observations were confirmed, but I take the evidence further by applying models from foraging theory to explain relationships between changing technological organization and subsistence. Changes through time in technological design do not necessarily reflect hunting capabilities, but rather are adaptive features related to resource intensification and mobility, as Giddings clearly understood.

Triadan, Daniela (University of Arizona) and Takeshi Inomata (University of Arizona)

[59] *Maya Economic Organization and Power: Elite Households at Aguateca*

The rich data from elite households at the Classic site of Aguateca indicate that each household was a relatively autonomous economic unit of production and consumption of staples and utilitarian goods. While individual households were also specializing in the production of a variety of prestige items, there is little evidence for central control of any sphere of the economy by the royal court or elites. Individual households also seem to have maintained their own long-distance relationships with other elites from different areas. One intriguing question is why Maya elites, in apparent contrast to elites of complex societies in other parts of the world, did not seem to have developed and used a centralized economy as a means of power and political control. The unique data from Aguateca elite households contributes to a better understanding of Classic Maya economic organization.

Tricarico, Anthony (University of South Florida), E. Christian Wells (University of South Florida), Georgia Fox (California State University, Chico) and Reginald Murphy (The National Parks Authority of Antigua)

[120] *Geomorphological Assessment of Plantation Landscapes in Antigua, West Indies*

Geomorphological survey and analysis of anthropogenically modified soils surrounding the Betty's Hope Plantation in Antigua, West Indies, sought to model the impacts of colonial farming on local landforms. Sugarcane was extensively farmed across the island from the mid-seventeenth century until independence from Great Britain in 1981. Physical and chemical analysis of subsurface soils and sediments was conducted to understand the landscape legacies of British colonialism on landscape modification. This work is concerned with differentiating and modeling erosion and landscape degradation resulting from intensive agriculture. Geomorphological survey and analysis at Betty's Hope is ongoing, with an ultimate goal of providing a complete picture of land degradation island-wide and across different time scales, both ancient and historic. This project contributes to archaeological research on post-abandonment degradation of a built landscape, while also considering the cumulative impacts to modern farmers.

Tringham, Ruth [261] see Ashley, Michael

Triozzi, Nicholas

[6] *All Methods, no Madness: Making Sense of Burial Orientations using GIS*

Mapping the excavations at the Fallen Tree Mortuary Complex, St. Catherines Island, GA, effectively consolidated nearly sixty burials and hundreds of features into a cohesive view of the site. Similarity of burial orientation and bodily positioning jumps out immediately. At a glance the norm is that

individuals face east with their heads to the south. Examining this pattern more closely called for a more advanced utilization of GIS. Techniques used to quantify burial orientation of the large number of individuals at Fallen Tree were successfully used on secondary sources depicting maps of mortuary sites. In this poster a model workflow is presented to benefit both novice and advanced ArcGIS users with access to either primary or secondary data. Additionally, access to a customizable toolbox that consolidates steps in the workflow is made available for download.

Troccoli, Ruth (D.C. City Archaeologist) and Mia Carey (Dept. of Anthropology, University of Florida)

[90] *Public Archaeology in the Nation's Capital: The Yarrow Mamout Project*

A unique project in Washington, D.C., was initiated by residents when redevelopment threatened a property once owned by Yarrow Mamout. Freed in 1797, Yarrow was literate in Arabic when he was enslaved in west Africa. He purchased a Georgetown lot in 1800 and upon his death was said to be buried in his garden. While many Georgetown residents at the time were former slaves, Yarrow stands out only because his portrait was painted twice. As with most formerly enslaved property owners, he left only a trace in the documentary record. Archaeology is the only avenue for directly accessing more tangible evidence with which to understand his life story. The D.C. Historic Preservation Office is sponsoring a public archaeology project and utilizing donated resources to conduct excavations on Yarrow's former property. The efforts unite archaeologists, neighbors, K-12 educators, local universities, the Muslim community, historic preservationists, and a host of volunteers.

Troncoso, Andres

[175] *Animating Sacred Landscapes through Making Rock Art*

To understand the relationships among rock art and ritual landscapes needs recognize how the process of making engaged in a set of spatial and social practices. These practices create a field of relationships that define the ritual of rock art as well as the sacredness of landscapes. In this paper, we discuss this process in a prehispanic agrarian community of Central North Chile. We propose the process of making rock art related to the animation of a world constituted by a web of non-human and human actants through the creation of central and sacred places in the landscape. This idea of central places was experienced and constituted by a specific articulation of spatial practices that located petroglyph far away of residential sites but in mediation points between the quotidian and non-quotidian landscapes. The sacredness of this central didn't rest only in the characteristics of the images, or in a particular geomorphological attribute of that point. Its sacredness was the result of a complex web of relationships among space, rocks, social practices, images and movements along the landscape. This research has granted by FONDECYT 1110125 & 1150776

[259] *Chair*

Troncoso, Andres [259] see Salazar, Diego

Troufflard, Joanna (University of Florida)

[263] *Historical Ecology of Landscape Transformations and Ceramic Industries at the Site of Cedro (Lower Tapajós) from Pre-Colonial to Colonial Times*

The presence of demographically dense indigenous societies in the Lower Tapajós River during A.D. 900–1600 is visible in the present day's landscape through the existence of Amazonian Dark Earth (ADE), earthworks, and a distinctive ceramic industry. As demonstrated by recent archaeological surveys, landscape transformations and ceramic assemblages associated to the Tapajó chiefdom are widespread at the regional scale and attest to common cultural practices. Although these archaeological sites are found in diverse geographical settings, most of the archaeological research has focused on the site of Santarém, located at the mouth of the Tapajós River and interpreted as the "capital" of the Tapajó chiefdom. This paper aims to present a study of the Cedro site, located on the Belterra plateau (30 km away from the mouth of the Tapajós River) as a regionally significant socio-political center where indigenous people lived and gathered for large-scale ceremonies. For this purpose, it uses ethnohistorical and archaeological data within a historical ecology framework that emphasizes a long-term perspective. In the site of Cedro there are significant landscape transformations and diversity in ceramic industries that could call into question the hegemony of the site of Santarém as the exclusive socio-political center of the Tapajó chiefdom.

Trudel, Stephanie [29] see Lewarch, Dennis

Truex, Lise (University of Chicago)

[143] *Beyond the Palace Walls: Household Perspectives on Living and Working in Late 3rd Millennium B.C. Tell Asmar, Iraq (Ancient Eshnunna)*

Past studies contextualizing residential neighborhoods within the socioeconomic, political, and geographic organization of early historic urban settlements in ancient southern Mesopotamia have concentrated heavily on architecture and ancient textual evidence to document diachronic changes in household fortunes. As part of a Ph.D. dissertation project, this investigation of households from the late third millennium B.C. levels of the Private Houses residential area at urban Tell Asmar (ancient Eshnunna, Iraq), reconstructs household economies for several houses across time using 1930s University of Chicago Oriental Institute excavation data, but it relies to a greater extent on object and findspot data within houses, showing the value of using object data to conduct archival household archaeology in early historic contexts where excavations yielded only a limited number of ancient texts after episodes of looting. At least one elite house played a major economic role in the neighborhood across generations. Toward the end of the third millennium, neighborhood reorganization through reconstruction and new construction of elite houses on the northern edge of the residential area coincided with architectural reorganization of the adjacent Northern Palace and evidence connecting individuals and economic activities in high status households to urban administration.

Trusler, Kate (University of Missouri)

[103] *Approaches to Understanding Skeletal Part Frequencies in Roman Assemblages*

Since the 1950s, zooarchaeologists have noticed that the expected number of each skeletal element varied from the recovered frequencies. Determining the reason for such variation is an important aspect of zooarchaeological research. Several approaches to understanding skeletal part frequencies are current, including density mediated attrition and differential transport. One method of interpreting skeletal part frequencies that is underused in studies of complex societies involves food utility indices. Food utility indices provide a framework for interpreting skeletal part frequencies based on the food (meat, marrow and grease) associated with each element. Food utility can also be used as a proxy for economic value in complex societies. A food utility index for cattle was created for this project and the site of Maasplein, Nijmegen is used as an example.

Tryon, Christian (Harvard University)

[22] *Discussant*

Tryon, Christian [177] see Ranhorn, Kathryn

Tsai, Howard (University of Michigan)

[102] *The "Coastal Cajamarca" Style Did Not Come from the Coast*

The "Coastal Cajamarca" style of painted bowls was first documented by Disselhoff in the 1950s at the site of San Jose de Moro (Lower Jequetepeque Valley, Peru). There are two competing hypotheses with regard to the origin of this ceramic style: (1) it originated from the coast or (2) it was produced in the middle valley or chaupiyunga zone, an intermediate area between the coast and the highlands. In this paper I present evidence from the site of Las Varas, located in the Middle Jequetepeque Valley, to support the second hypothesis—that the "Coastal Cajamarca" style in fact came from the chaupiyunga zone. Identifying the correct "homeland" of this variant of Cajamarca pottery is vital for understanding coast-highland interaction in northern Peru and provides a crucial first step for evaluating John Murra's vertical archipelago model of exchange and colonization as it pertains to the North Central Andes.

Tsukamoto, Kenichiro (The Japan Society for the Promotion of Science (Aoyama Gakuin University))

[59] *A Discrepancy between Elite Office and Economic Status in the El Palmar Dynasty, Mexico*

The identification of elite titles through epigraphic studies has raised new questions about the relationship between elite office and economic status. The present study focuses on a social group referred to by the title lakam, which was detected in the inscriptions of a hieroglyphic stairway at the El Palmar archaeological site. Our epigraphic studies revealed the involvement of lakam officials as emissaries in political alliances between El Palmar, Calakmul, and Copán, suggesting that they held a relatively high political position. Nevertheless, archaeological data indicate that such political privilege with the distant dynasties appears not to have been reflected in their economic status, a discrepancy that gives us a deeper understanding of the Classic Maya political economy.

Tucker, Gregory (University of Michigan)

[33] *Moderator*

Tucker, Bryan (Georgia Department of Natural Resources) and Jennifer Weber (Georgia Department of Natural Resources)

[213] *The Effects of Reenactment on Historic Battlefields: A Pilot Study from McLemore Cove, Georgia*

Natural and historic resource managers are confronted with conflicting obligations and priorities; they must provide access to a resource while simultaneously protecting the resource for future generations. This tension between use and preservation is apparent when members of the public want to stage military reenactments on historic battlefields. Military reenactors are a passionate constituency who support battlefield preservation and volunteer time and funds to preserve these resources. Many of these groups want to educate the public by reenacting a battle on the original site. Though the National Park Service (NPS) has banned reenactments on NPS sites, no systemic studies have been conducted to investigate the effects reenactments have on historic sites. To assess the impact of reenactment on historic sites, the Georgia Department of Natural Resources and New South Associates, Inc. conducted a comparative metal detection survey before and after the 2013 Battle of Chickamauga reenactment at McLemore Cove, Georgia. These results provide evidence that large-scale reenactment can negatively impact historic resources through the introduction of replica materials, the introduction of new features and the potential damage to above ground features and the landscape and support the NPS ban on reenactment in National Parks.

Tucker, Bryan [295] see Krigbaum, John

Tun Ayora, Gabriel [127] see Ringle, William

Tune, Jesse (Department of Anthropology, Fort Lewis College)

[159] *The Clovis-Cumberland-Dalton Succession: The Evolution of Behavioral Adaptations During the Pleistocene/Holocene Transition*

Considerable debate has recently been focused on understanding the effects of the Younger Dryas on human behavioral adaptations throughout the Northern Hemisphere. It has been proposed that adverse paleoecological conditions in southeastern North America triggered a decline and/or substantial reorganization in human populations. The Tennessee Paleoindian biface data in the Paleoindian Database of the Americas is used to assess the evolution of behavioral adaptations during the Pleistocene/Holocene Transition. These changes are considered in relation to regional paleoecological data. Patterns in technological organization, landscape use, and toolstone selection do not support the hypothesis that climate changes during Younger Dryas adversely affected human populations in the interior Southeast. An alternative hypothesis is proposed and contends that changes in behavioral adaptations were a result of settling-in processes associated with initial regional colonization and increased regionalization throughout the Pleistocene/Holocene Transition.

Tune, Jesse [218] see Miller, D. Shane

Tung, Tiffany [204] see Proctor, Terren

Tung, Tiffany (Vanderbilt University, Department of Anthropology), Theresa Miller (Vanderbilt University, Department of Anthropology), Jessica Oster (Vanderbilt University, Department of Earth & Envir) and Larisa DeSantis (Vanderbilt University, Department of Earth & Envir)

[205] *Evaluating the Utility of Using Stable Oxygen Isotope Analysis to Study Ancient Migration and Climate Reconstruction in the Ayacucho Basin of Peru*

This study examines whether oxygen isotope analysis can be used to study ancient human migration in the central, highland Andes of Peru (Ayacucho Basin). Although strontium isotope analysis is a reliable way of exploring questions of migration, oxygen isotope analysis, which is significantly less expensive, may offer preliminary insights regarding the possible presence of migrants at a site. This approach has not yet been used in the Ayacucho Basin where the Wari empire was centered, so we explore its utility in this region of the Andes. We present oxygen isotope ratios from local streams and rainwater from different seasons in the modern era, and from animal and human dentition that correspond to two temporal contexts at the site of Huari: Terminal Wari (ca A.D. 1000–1100, N=34 humans) and Post-Wari (Late Intermediate Period, A.D. 1250–1400, N=26 humans). Results show that among the 102 enamel carbonate samples from the 60 humans, the $\delta^{18}\text{OVPDB}$ ranges from -10.32 to -6.82 and the mean $\delta^{18}\text{OVPDB}$ = -8.9 (sd=.64). These oxygen isotope values will be compared to those obtained from local modern water and archaeological fauna to evaluate their utility in establishing local baseline values and in detecting whether any individuals might be non-local.

Turck, John (Geoarcheology Research Associates)

[253] *GIS and Remote Sensing in Archaeology: Jerry Kennedy's Influence on Large Scale Studies*

The use of GIS and remote sensing for discerning patterns in past cultural phenomena has exploded in the last 15 years. It has moved beyond mere map-making, to sophisticated analyses (incorporating aspects such as spatial statistics, regional archaeological data, LiDAR data, and 3-D representations) that synthesize large and diverse datasets to better understand the past. This is especially true when reconstructing human settlement patterns to understand the nature of social change and the relationship between people and their environment. The research presented in this paper will highlight some of our work where GIS and remote sensing analysis has helped us to better understand the complex patterns seen in the archaeological record. Our initial introduction to GIS in archaeology can be credited solely to Jerry Kennedy, encouraging us to learn, and take full advantage of, this burgeoning field of inquiry. This was just one of the many aspects of Jerry Kennedy's mentoring that helped us focus our studies, and transition from students to professionals at the beginning of our academic careers.

[157] *Chair*

Turck, John [157] see Thompson, Victor

Turcotte, Sari [204] see Walter, Tamra

Turner, Bethany [45] see Gagnon, Celeste

Turner, Daniel, Steven Meredith (Panamerican Consultants, Inc.) and Martha Dorland (Panamerican Consultants, Inc.)

[225] *Excavation of a Chickasaw Homestead in Tupelo*

In March and April 2015, a Phase II cultural resources investigation was conducted to assess the National Register of Historic Places (NRHP) eligibility of the Webb Site (22LE516) in Tupelo, Mississippi. Excavations identified 36 cultural features, including the outlines of two Chickasaw houses and several nearby clay-extraction pits, or okaakinafa'. Materials recovered from the site suggest a single-component occupation between A.D. 1680 and 1760. The site lies near the eighteenth-century complex of settlements known as Chokkilissa' or "Old Town" and represents one of the few Chickasaw settlements investigated using modern excavation standards. The apparent short-lived occupation of the site opens an opportunity for a detailed review of site formation and material use in the volatile eighteenth century on Mississippi's Black Prairie.

Turner, Michelle (Binghamton University)

[228] *Chacoan Heights at Aztec Ruins*

At the Chacoan outlier of Aztec Ruins in northern New Mexico, the unexcavated Aztec North great house is located on top of a river terrace overlooking the broad Animas River Valley. Down below, but out of sight from Aztec North, are two other great houses. The builders of these three great houses enmeshed them in a planned cultural landscape that reflects their cosmology and that intentionally reproduces a portion of the landscape at Chaco Canyon. Aztec North differs from its fellow great houses in a number of ways, most significantly in its unusual adobe construction, but also in its terrace siting and broad viewsheds. Research suggests that Aztec North, built around 1100 A.D., was the earliest great house at Aztec, but how did its construction and occupation reflect the ambitions of new arrivals on this landscape, as well as their political and social relations with Chaco? Exploring the use of high places in greater Chaco and drawing on my ongoing research on surface ceramics from this unexcavated site, my paper considers the significance of Aztec North as a high place within the greater cultural and political landscape of Aztec Ruins and the Chacoan region.

Tuross, Noreen [223] see Bos, Kirsten

Twaroski, Melissa

[165] *Celebrating Partnerships in Preservation: The Southern Region of the U.S. Forest Service and the 50th Anniversary of the National Historic Preservation Act*

The Southern Region of the U.S. Forest Service encompasses fifteen national forests in fourteen southeastern states and Puerto Rico. For decades, the important work of investigating and protecting significant cultural resources on these national forests has depended on partnerships with universities, Native American tribes, and non-profit organizations. In celebration of the 50th anniversary of the National Historic Preservation Act, this presentation highlights some of these key partnerships and important projects.

Tykot, Robert (U. of South Florida) and Andrea Vianello (United Kingdom)

[81] *Island Obsidian Distribution and Socioeconomic Patterns in Prehistoric Sicily and the South-Central Mediterranean*

Sicily is located in between two small island sources of obsidian, Lipari and Pantelleria. Their use of obsidian starting in the Early Neolithic (ca. 6000–6500 B.C.) is well documented, but only over the last few years have intensive studies been done on the specific sources and subsources of artifact assemblages from many museums and superintendencies. With the use of a portable X-ray fluorescence (pXRF) spectrometer, the specific source of many hundreds of obsidian artifacts from sites in Sicily (in the areas of Palermo, Agrigento, Siracusa) and islands to its south (Malta, Gozo, Lampedusa, Zembra) have been conducted.

Lipari obsidian was the most extensively used in the central Mediterranean, beginning after volcanic formations at Gabelotto Gorge and Canneto Dentro just before the Early Neolithic when animal and plant domesticates arrived and ceramic production also began. Lipari obsidian was immediately distributed to the north, reaching as far as southern France and the northern Adriatic in Croatia. In contrast, obsidian from Pantelleria was regularly used in western Sicily, on Malta and other islands to the south, and in Tunisia. Our extensive study now allows a clear interpretation of obsidian use and socioeconomic changes over the neolithic and bronze age time periods.

[81] Chair

Tykot, Robert [146] see Freund, Kyle

Tynan, Justine [149] see Parditka, Györgyi

Ubik, Emily [184] see Marston, John

Uchiyama, Junzo (World Heritage Center Division, Shizuoka Prefectural Government) and Christopher Gillam (South Carolina Institute of Archaeology and Anthro)

[132] *Pottery, Shellmounds, and Monuments: Environmental Impacts and Landscape Management of Hunter-Gatherer-Fisher (HGF) in Jomon Japan*

The Jomon Period in Japan (ca. 16,500-3,000 B.P.) is one of the world's earliest ceramic-making cultures. The Jomon sustained a hunter-gatherer-fisher (HGF) economy for an extensive period of time until the introduction of the wet rice paddy system from the Asian continent. Three major factors characterize the Jomon cultural landscape: pottery, shell mounds, and stone/wood monuments. This paper will discuss the roles these elements played in the alteration of the landscape. First, despite the early emergence of pottery, ceramics dramatically increased in quantity and came into daily use only after a sedentary lifestyle became widespread in the Early Holocene. As firing pottery requires substantial firewood, pottery uptake must have produced considerable pressure on local environments, fostering a complex use of resources. Second, large-scale shell mounds followed the development of pottery, probably functioning as landmarks to strengthen social bonds of local communities. Finally, stone/wood monuments were the last to appear, when the Jomon society expanded into previously unused settings, such as alluvial flatlands and deep mountains. All of these are closely related to the perception, management and alteration of the Jomon's hunter-gatherer-fisher environment and cultural landscape.

Ueda, Kaoru (Boston University)

[51] *Exotic or Familiar? : Exploring the Multi-directionality of Cultural Influence of Asian Porcelain in the late 17th- early 19th-century Dutch sites in Banten, Indonesia*

This paper explores the roles of Chinese and Japanese porcelain excavated at the Dutch East India Company forts built in the Sultanate of Banten, Java, Indonesia and raises the questions of how to interpret Asian porcelain in European-related sites in Asia. The paper pays particular attention to the multi-directionality of cross-cultural influence and the assumed exoticness of Asian porcelain to European consumers. In 1596, the first Dutch expedition in the East Indies went to the Sultanate of Banten in search of a pepper-trading partner. Eventually, the Dutch colonized the indigenous population through indirect rule at the beginning of the nineteenth-century. Dutch material culture in Banten, however, remained largely Asian, including Chinese porcelain in this early stage of colonialism: the Dutch used Asian porcelain extensively, rather than importing European ware. Were the Dutch in Banten fascinated with exoticness of Asian porcelain, or were they already familiar with Asian ceramics in the Netherlands before arriving in the East Indies? For the purpose of interpreting archaeological records more finely, this paper suggests the importance of understanding the evolving and dynamic nature of Asian porcelain to 17th -19th-century consumers and its place in this increasingly connected world on a global scale.

[51] Chair

Ugalde, Paula [62] see Osorio, Daniela

Ullah, Isaac (Arizona State University)

[72] *Traces Of Complexity: Connecting Model Output with Archaeological Reality*

Simulation models are explicit descriptions of the components and interactions of a system, made dynamic in software. In archaeology, they are most often used to conduct controlled experiments, in which key socio-ecological parameters are varied, and changes to system-level dynamics are observed over time. An interesting emergent property of these kinds of experiments is that they produce a range of possible outcomes for any set of initial conditions. Thus, rather than use simulations to explain particular case studies from the past, they are better suited to examine the dynamics of ancient systems in a more general way. Models need to be parameterized and validated, however, and so *do* need to be connected to empirical data; a useful model must be capable of producing the same *kinds* of patterns observed in the archaeological record (but not *only* these patterns). It is often difficult, however, to connect model output to real data. In this presentation I draw upon research and modeling techniques being developed by the Mediterranean Landscape Dynamics Project to explore ways of connecting the output of simulation models to archaeological "reality". I will discuss best practices, and will show examples from a variety of modeling case-studies.

Ullinger, Jaime [149] see Capece, Matthew

Ulloa Hung, Jorge (Postdoctoral Researcher ERC Synergy-NEXUS 1492) and Roberto Valcárcel Rojas (Postdoctoral Researcher ERC Synergy-NEXUS 1492)

[220] *Migrations, Colonizations, Perisferies, and Historical Divides. An Analysis of the Construction and Deconstruction of the "Archaics" in Cuba and Hispaniola*

The diversity, complexity, and continuity of "archaics" communities is one of the most recurrent themes in contemporary Caribbean archeology. Despite this, the tradition of research on this phenomenon goes back more than 40 years in Cuba and La Española, prompting classifications and models under the dominance of four basic theoretical approaches: colonization, diffusion, evolution, and transculturation. This paper examines, discusses and compares the treatment and management of archaeological data on these communities on both islands, and the impact of these approaches to create the so-called archaic vs farmers historical divide; and homologies with another divide, pre-colonial vs colonial. It is de-construct and contextualize the essential features

of both divides as a result of handling of archaeological data that have generated ideas on marginalization and invisibility of indigenous population cores in two different historical moments and result of various "colonizers processes". Aspects which in turn have become in creations of transformation prototyping about the "archaic" indigenous societies.

Ulloa Hung , Jorge [220] see Valcarcel Rojas, Roberto

Umbelino, Cláudia, Francisco Francisco Curate (CIAS, University of Coimbra), Teresa Ferreira (Cencifor, University of Coimbra), Eugénia Cunha (Cencifor, University of Coimbra) and Nuno Bicho (ICArEHB, University of Algarve)

[49] *Cortical Bone Loss in the Human Skeletons Recovered from the 21st Century Excavations of Cabeço Da Amoreira Shell Midden*

Bone loss has been extensively evaluated in archaeological samples, adding diachronic complexity to the biomedical knowledge about skeletal changes associated with gender, age, genetics, menopausal status or lifestyle. In this paper, the first results of Portuguese Mesolithic cortical bone loss are presented. Radiogrammetry of the second metacarpal was used to assess cortical parameters (diaphysis total width, medullary width, and cortical index). The classical osteoporotic fractures (vertebral compressions, hip, distal radius, and proximal humerus) were also assessed.

The final Mesolithic sample comprises four adult individuals recovered from the Cabeço da Amoreira site: a young female, with an age at death between 18 to 20 years and an adult male (recovered during the 2000 and 2001 excavations), and another young female with approximately 20 years old and a middle-aged to old individual. Results were compared with cortical bone parameters in two samples from Portuguese skeletal reference collections (Coimbra Identified Skeletal Collection [N=196] and the Twenty-First Century Identified Skeletal Collection [n=44]), aiming to detect diachronic variations in the overall patterns of cortical bone loss, and to identify the etiological factors of cortical bone loss during the Mesolithic.

Ur, Jason (Harvard University)

[12] *Assyrian Landscape Planning in the Core of the Empire (ca. 900–600 B.C.)*

A variety of evidence has been used to suggest that the Assyrian kings and their planners made dramatic changes to the landscape of the imperial core, and these changes were deliberate. This evidence mostly consists, however, of anecdotal observations and uncritical readings of propagandistic royal inscriptions. The hypothesized planned Assyrian landscape also conflicts with the results of systematic archaeological research on preceding Bronze Age landscapes, which were largely self-organized. This presentation analyzes two seasons of survey and landscape research by the Erbil Plain Archaeological Survey in the core of the empire, in what is today the Kurdistan Region of Iraq. Initial results of settlement patterns and hydraulic engineering suggests that in the shift from the small kingdoms of the Bronze Age to the massive Assyrian empire of the Iron Age, the ability of central planners to impose their will on the landscape had grown, and that the imperial core was heavily designed.

[12] *Chair*

Urban, Thomas M. [148] see Chisholm, Linda

Urban, Thomas (Cornell University)

[217] *The Lessons of J.L. Giddings' Early Attempt at Geophysical Surveying in the Western Arctic*

Archaeologist J. Louis Giddings is known widely for his excavations of major sites in the western arctic from the 1940s until his untimely death in 1964. Giddings was also a notable innovator in archaeological science, integrating new techniques into his research almost immediately after they were developed. Very early on in his career, for example, Giddings made use of dendrochronology, establishing some of the earliest tree-ring chronologies in Alaska. This was immediately after dendro was introduced as a dating technique. He also made use of radiocarbon dating shortly after the technique became available in the early 1950s. Less well known, however, is Giddings' early attempt at implementing geophysical techniques in his field investigations. Most notably, Giddings attempted magnetometer surveying only two years after the technique saw its first serious use in archaeology, and two years before the first published magnetic survey in N. America in 1962. This paper discusses Giddings' early use of geophysical methods in light of later developments in archaeological geophysics and current field research in the region.

Ure, Scott [104] see Richens, Lane

Uribe, Mauricio [57] see Correa Gurrulat, Itaci

Uribe, Mauricio

[259] *Márgenes y Centros del Tawantinsuyo en el Norte Grande de Chile (Andes Centro Sur)*

A partir de los postulados de Murra sobre los Incas, Llagostera planteó para el Norte de Chile la ausencia de una conquista propiamente tal, puesto que sus poblaciones se hallaban insertas en sistemas preincaicos de complementariedad ecológica, cuyas cabeceras o "señoríos" se encontraban vinculadas al altiplano central del Titicaca. Las que una vez anexadas al Tawantinsuyo, implicó un dominio casi automático de las entidades restantes ubicadas en lugares más bajos como los del norte chileno, situándolas en una condición periférica e incluso al margen del control cusqueño. De acuerdo con su propuesta, esta situación se dirimía en términos de cuán abundante o no era la materialidad del Inca en los territorios ocupados, cuánto se atenía al estilo original del Cusco y cuáles eran sus relaciones con la explotación "vertical" del espacio andino. Lo anterior ha redundado en plantearse la expansión y/o formación del Tawantinsuyo de manera dicotómica como una dinámica de presencia o ausencia, de centro o periferia, hegemonía o territorialidad, especialmente determinada por indicadores cerámicos. Aprovechamos el marco de este simposio para discutir dichas categorías desde el análisis cerámico y a partir de distintos casos del Norte Grande que permitan avanzar en la comprensión del fenómeno panandino.

Uribe , Mauricio [57] see Vidal Montero, Estefania

Urquhart, Kyle R. [101] see Solinis-Casparius, Rodrigo

Urton, Gary (Harvard University)**[172]** *Color in Wari and Inka Khipus*

This paper analyzes the uses of color in the Wari and Inka khipus. The focus of the study will be on the ranges and ways of combining colors used in each tradition. The central question to be addressed is: How was color used as a medium of coding information in each tradition and what can we say about how and why the system of color may have changed as it did from Wari to Inka times?

[172] *Chair*

Usai, Donatella [177] see Banks, Kimball

Usman, Aribidesi (Arizona State University)**[177]** *A Report of Recent Excavation at Okete-Kakini Palace Precint, Idah, Niger-Benue Confluence, Nigeria*

This paper will report the recent excavation at Okete-Kakini site near the king's (Attah) palace in Idah. Okete-Kakini was the residential area of Attah's eunuchs (amonoji), one of the two major palace officials who carried out various functions for the Attah. The aim of the investigation is to identify the activities of the palatine elites through an examination of their material culture found in archaeological excavations. It is thought that the members of the palatine groups, like the formal elites, used their settlements and their day-to-day consumption to exhibit their status. The overall goal of the research was to have a better understanding of the social and political organization of Igala and the intrasite distribution of materials.

Vacca, Kirsten [247] see Schoenholzer, David

Vacca, Kirsten (University of California, Berkeley)**[251]** *Let the Memory Live Again: Creation and Recreation of Hawaiian Households*

Investigating the use of memory allows for an increased understanding of how historical knowledge is used in the reproduction of social actions in the past and production of knowledge in the present. This paper analyzes the importance of memory in Hawaiian culture and academic literature. Many archaeological analyses of pre-European contact Hawaiian households are predicated on the writings of nineteenth century ethnohistorians (among others) that recorded Hawaiian oral traditions. The act of utilizing oral traditions as a form of remembering and reproducing the cultural structure through scholarship creates an image of a falsely simplistic and static society lacking in temporally and spatially diverse practices. The importance of Hawaiian cultural production and reproduction through corporeal acts of remembrance is made obvious in the current recorded Hawaiian traditions, yet the static implementation of these descriptive practices in the analytical process by archaeologists prohibits a nuanced understanding of how reproduced memories are enacted differently through time and space, instead assuming that the remembered lives of Hawaiians from one point in history are representative of an entire people through time and space. The recorded traditions should instead be utilized as an illustration of the fluidity and complexity of Hawaiian culture.

Vaccari, Andrés [272] see Lanata, Jose

Vadala, Jeffrey (University of Florida)**[77]** *Reconsidering Heirarchy, Caching, and Architectural Practices at Cerros Belize*

Caches have been recovered in the Maya area dating to every period since the Middle Preclassic (c. 700 B.C.) and are among the most common assemblage type recovered from Maya architecture. In the past, most scholars have treated caches as a normative Maya custom, failing to identify significant spatial and temporal variation within cache assemblages. Additionally, many studies have isolated cache contents from their larger contexts, especially the context of the rituals of which they were a component. Taking a different view, my project illuminates caching as a set of repeated ritual events that would have organized ritual and productive social processes resulting in "structured depositions" that linked many aspects of ancient Maya life. The social processes that produced caching events have been characterized by mapping the activities associated with caching as networks that emerged in each caching event, creating 3D computer generated reconstructions to examine ritual space. Furthermore, each of Cerros' recovered caches has been contextualized by diachronic approach employing Bayesian modeling. The results of this analysis have dramatically shortened Cerros' Preclassic occupation history and have provided data to support new interpretations about the rise of hierarchy and the development of social order at Cerros.

Vadala, Jeffrey [270] see Leonard, Daniel

Vaiglova, Petra (University of Oxford), Amy Bogaard (University of Oxford), Panagiotis Karkanas (Wiener Laboratory, American School of Classical St) and Maria Pappa (Hellenic Ministry of Culture & Sports, Thessalonik)**[189]** *Preparing the Feast: Understanding the Nature of Agricultural Economy at Neolithic Makriyalos, Northern Greece, using Multiple Isotopes*

The aim of this study is to gain a deeper understanding of the agricultural management strategies employed by farmers at Neolithic Makriyalos, northern Greece. Building on results of previous archaeobotanical and archaeozoological analyses, it brings together the results of a series of stable isotope measurements to ask questions about the scale and intensity of farming at a Neolithic flat 'extended' site. Stable carbon and nitrogen isotopes of charred plants will be used to infer crop-growing conditions (such as soil fertility) and, together with the values of domestic and wild animal remains, will help interpret possible dietary sources of protein for the humans. Stable carbon and oxygen isotope values from sheep/cattle tooth enamel carbonate will be used to assess seasonal variation in diets and grazing behavior of these domestic animals. Finally, in view of the site's role as a center for communal feasting, strontium isotopes from tooth enamel will be used to assess whether the cattle slaughtered at this feast were managed locally and/or imported from elsewhere. This study demonstrates the usefulness of combining several strands of stable isotope analysis to address new questions about the nature of ancient farming economy.

[189] *Chair***Vail, Gabrielle (New College of Florida)**

[15] *Audience and Ritual Context Associated with Painted Capstone and Codical Texts from the Northern Maya Lowlands*

The northern Maya lowlands provide a rich corpus of painted texts associated with the interior and exterior walls of buildings; capstones serving to seal off vaulted chambers, which often contain burials; and painted screenfold books, or codices. In a number of cases, these texts and their associated pictorial component were painted to commemorate—or provide the template for—important rituals. Many of these rituals can be identified based on ethnohistoric sources, including Diego de Landa's "Relación de las cosas de Yucatán," which highlights the "festivals" associated with each twenty-day month of the year, as well as other ritual occasions. This information, in combination with that from the hieroglyphic and iconographic sources, provides important clues for determining context and audience. This paper examines the underlying agricultural basis of both capstone and codical texts and explores what the different media, time periods (the former date to the Late and Terminal Classic periods and the latter to the Late Postclassic Period), and hieroglyphic captions tell us about elite versus agrarian rituals and what they reveal about a group's social memory.

[15] *Chair*

Vail, [92] see Fenn, Mallory

Valcarcel Rojas, Roberto (Postdoctoral Researcher ERC Synergy-NEXUS 1492) and Jorge Ulloa Hung (Postdoctoral Researcher ERC Synergy-NEXUS 1492)**[220]** *Levisa 1. Diversity and Complexity in a Key "Archaic" Context of Cuba and the Caribbean*

The archaeological site Levisa 1, in northeast Cuba, possesses one of the earlier radiocarbon dates for the so called "archaic" communities in this Island and one of the earliest one from the Caribbean region. For this reason that place is a basic reference for the study of the "archaic" groups. Also due to its location and potential link with other important archaic sites, and because possesses contexts that reflect diverse types and moments of pre-Arawak's occupations, and even ceramic use. This paper revises the archaeological data of Levisa 1, the history of its investigation and its implications in the knowledge of the archaic societies in Cuba and the Caribbean. We discuss how the methodological and theoretical changes more than the incorporation of new data or a detailed and deep analysis of the available information have determined the understanding of that space.

Valcárcel Rojas, Roberto [220] see Ulloa Hung, Jorge

Valdez, Fred [130] see Aebersold, Luisa

Valdez, Fred (University of Texas At Austin)**[162]** *Maya Archaeology: Research & Interpretations with Dr. Scarborough*

More than 25 years of collaborative research with Dr. Scarborough has provided for interesting ups & downs in understanding prehistoric Maya activities. Beginning at Cerros, intervening distant research, rejoining at Kinal (Guatemala), and culminating in NW Belize (for now) has allowed for a fascinating journey of archaeological investigations. Presented here are both scientific endeavors as well as events from field activities during nearly three decades of mutual research interests from settlements questions to water management concerns.

[162] *Chair***Valdez, Francisco (IRD / France - Ecuador)****[178]** *Early Complexity in the Upper Amazon: The Mayo Chinchipe-Marañón.*

Hypotheses that held Amazonia untenable for the development of complex societies have now been discarded. The presumed incapacity of the soil to ensure permanent agricultural production (sustain large populations) has been proved false, not because of the limitations of the soil, but rather because Amazonians found ways to overcome the flaws and develop adequate strategies for sustainable food production. Recent studies show that early complexity was present in the tropics with forms of typical Formative period technologies and practices, such as pottery, polished stone artifacts or long distance exchange networks. The presentation will focus on the material culture and the ideology of an early complex society called the Mayo Chinchipe-Marañón, situated on the upper Amazon frontier region between Ecuador and Peru. Evidence dating around 5500/3500 B.P., from the site Santa Ana-La Florida (Palanda) shows the existence of a precocious ceremonial center that rallied the neighboring areas. The complicated stone architectural layout and the importance of the funerary paraphernalia found on the site suggest a strong ideological structure that led and managed the population on a regional scale. Similar findings have been studied in the Jaén/Bagua region of the Chinchipe-Maranon basin in Peru.

Valdez, Jr., Fred [130] see Locker, Angelina

Valencia, Rogelio [256] see Martin, Simon

Valencia Rivera, Rogelio [256] see Vázquez López, Verónica

Valentine, Benjamin (Dartmouth College), Penny Jones (University of Cambridge) and Erik Otárola-Castillo (Purdue University)**[134]** *From Scatterplots to Statistics: Identifying the Local Isotope Range in Multivariate Data*

In recent decades, isotopic assays of strontium, lead, and oxygen in biological remains have revolutionized archaeological migration studies by providing direct evidence for the occurrence, timing, and geographic origins of individual residence change. Such research requires the clear identification of 'local' isotopic baselines for comparison against assayed individuals, and yet no single method to accomplish this task has emerged as best practice. Some researchers advocate the use of commensal fauna for determining 'local' isotopic ranges whereas others look to the structure (e.g., modality) of the dataset

under investigation. The use of multiple isotopes complicates the matter further, requiring new approaches to reduce the subjectivity and arbitrariness that characterize many earlier methods like scatterplots and standard deviations. Here we suggest a novel approach using standard statistical methods. We build on the assumption that the central tendency of faunal isotope ratios from habitation areas largely overlaps with the isotope ratios of 'local' humans. Furthermore, we use likelihood estimates of clustering solutions to systematically eliminate 'non local' fauna in multi isotope data sets. We present strontium and lead isotope case studies based on multiple taxa from Indus Civilization faunal assemblages in order to highlight the advantages of a standardized faunal metric.

Valentine, Benjamin [295] see Krigbaum, John

Valenzuela, Lucía [63] see Levy, Jessica

Valenzuela-Lamas, Silvia

[176] *Urbanisation and Animal Husbandry in Ancient Western Europe: How Territoriality Affects Negatively Husbandry Productivity*

Mobility is key to the survival and adaptation of human and animal populations. In all cases, having the 'right of way' is necessary to move across territories. How was it in the past? How humans decided about mobility in the context of demographic growth and increase of social complexity that occurred in Europe in the first millennium B.C.?

Strontium isotopic ratios are a powerful tool for investigating mobility in the past. This paper offers a review of strontium isotopic ratios for Western Europe from the Neolithic to Roman times, and correlates them with other three variables: the relative frequency of the main domesticates (%NISP), their size (biometry), and their cultural context. The results obtained show a decrease of cattle relative frequencies and size across all Europe from the Neolithic to the Iron Age, then higher cattle %NISP and size in the territories within the Roman Empire in classical times. Strontium isotope ratios show a progressive reduction in mobility from the Neolithic to the Iron Age and then an increase of geographic diversity in Roman times. Consequently, the results suggest a close correlation between the three variables —%NISP, biometry and mobility—and the degree of urbanisation of human populations.

Valera, António Carlos [103] see Grimes, Vaughan

Valley, John [176] see Beasley, Melanie

Van Alstyne, Benjamin (UNLV)

[68] *Understanding the Architecture of the Virgin Branch Ancestral Puebloan Using a Digital 3D Model-Based Process*

On the Shivwits Plateau, there is scarce information concerning how the Virgin Branch Ancestral Puebloan people constructed their pueblos. This is a result of post-depositional processes that have destroyed much of the building materials. Thus, to further our understanding of the Ancestral Puebloan efforts to live in a semi-arid environment, this research incorporates information obtained from Puebloan ethnographies, experimental archaeology, and excavations. The data is combined through a parametric 3D model-based process known as Building Information Modeling, to produce digital reconstructions of the ancient pueblos. These digital 3D models output volumetric data that are used to estimate material quantities and labor investments, and to evaluate whether the pueblos were occupied seasonally or year-round.

Van de Pas, Lucienne [225] see McTavish, Rachel

Van Den Bel, Martijn (INRAP - FRANCE)

[220] *The Late Archaic and Initial Ceramic Age in Coastal French Guiana*

Recent excavations at two archaeological sites in French Guiana (Eva 2 and Saint-Louis) presented evidence of a Late Archaic and Early Ceramic Age occupation which is comparable to other coastal sites in South America, such as the Alaka Phase in Guyana and the Mina Tradition in Pará, Brazil. These early ceramic sites represent the suite of a larger Archaic Age Littoral Tradition in which ceramics represented an innovative aspect to the Archaic way of life. Starch grain analysis showed that maize, sweet potatoes, arrowroot, and jack beans, were consumed among the Early Ceramic Age population of French Guiana who made use of polished tools, earth ovens, and large and spherical cooking pots in order to prepare food during the second half of the third millennium BC. The results of these large scale excavations add new data to this almost unknown but innovative episode in northern Amazonia, i.e. the shift from the Preceramic to the Ceramic Age or Formative Period.

[23] *Discussant*

Van Der Leeuw, Sander (SHESC)

[138] *Looking at the Ancient Maya from the Outside*

I owe Vern Scarborough a great debt for the opportunity to look into the dynamics of Maya research in the context of the IHOPE Maya project. As a historian and prehistoric archaeologist, I have been struck by the way in which, in the research, two perspectives were commingled: the prehistorian's perspective looking (back) towards the origins of the heyday of (Classic) Maya culture and the historian's perspective looking (forward) for the emergence of certain elements of it. It seems to me that unraveling these two perspectives might result in some more clarity. In particular, we have the choice between (a) looking for the (singular!) origins of the Maya sphere as a whole, and (b) reconstructing how (a number of) different societies in different parts of the Guatemalan highlands and the Yucatan emerge and grow into one cultural sphere. Do we look back from the present to the past or do we look forward from the past to the present and the future? In view of the data at our disposal both are necessary, but need to be distinguished. The paper will look at this from the perspective of water management and its relationship to social organization.

van Dolah, Elizabeth [191] see Hambrecht, George

Van Dyke, Ruth (Binghamton University)

[201] *Discussant*

Van Gijseghem, Hendrik (Dickinson College), Kevin Vaughn (UCLA), Jelmer Eerkens (UC Davis) and Gry Barfod (UC Davis)

[13] *Hematite (Ochre) Mining and Use on the South Coast of Peru ca. A.D. 1–400*

Located in the Nasca region of southern Peru, Mina Primavera was an important source of hematite for centuries, and in particular, was intensively exploited by people of the Nasca culture for a variety of end products. Here we explore technical and ritual dimensions involved in the mining process. We also present new data on iron isotopic ($^{56}\text{Fe}/^{54}\text{Fe}$) diversity from a single hematite source as information that is critical in sourcing and provenience. The new data are compared to previously published isotopic data from ochre samples found far from the mine, and from red and black paints on ceramics.

Van Keuren, Scott (University of Vermont), Jeffrey Ferguson (MURR Archaeometry Lab, University of Missouri) and Mary Ownby (Desert Archaeology, Inc.)

[66] *Tracing the Production of Fourteenth-Century Red Ware in East-central Arizona*

Ancestral Pueblo peoples in east-central Arizona crafted a unique type of representational-style pottery (Fourmile Polychrome) by the early A.D. 1300s. Questions remain about where the type was manufactured and how it circulated in the region. We present the results of a neutron activation analysis (NAA) of sherds from three villages where the type was likely produced. Building on earlier research, our analyses clarify issues of provenance and speak to the fourteenth-century social networks through which this pottery was exchanged.

Van Meirvenne, Marc [197] see De Smedt, Philippe

Van Oss, Sarah (The College of Wooster) and Olivia Navarro-Farr (The College of Wooster)

[235] *Serpents and Bowls: An Analysis of the War Serpent Vessel from Burial 61 at El Perú-Waka'*

In 2012, Dr. Olivia Navarro-Farr and her team excavated the tomb (Burial 61) of a Maya ruler in a large ceremonial structure at the site of El Perú-Waka' in Petén, Guatemala. A confluence of taphonomic, epigraphic, and ceramic evidence underscored the identification of these remains as likely pertaining to Lady K'abel, a queen already well known from texts associated with that ancient city. This poster will explore one of the artifacts found in Burial 61, called the War Serpent Vessel, placed at the interred's feet. In this study, I present an iconographic analysis of the plate that incorporates its archaeological context and significance. I will consider the vessel's imagery and contextual arrangement within the chamber to explore how gender and rulership were performed. I am also interested in how this particular iconography signaled Lady K'abel's particular role as ruler of Waka' in Late Classic Maya society. Through these explorations, I hope to further our understanding of the performance of rulership and gender, and how an ancient Maya queen and those who interred her expressed those structures and incorporated them.

Van Pool, Todd (University of Missouri), Christine VanPool (University of Missouri) and Lauren Downs (University of Missouri)

[67] *Dressing the Casas Grandes Person: Medio Period Clothing and Ritual*

Casas Grandes Medio period (A.D. 1200–1450) human effigies are unique in the North American Southwest in that they depict primary and secondary sexual traits, making determination of sex possible. We consider the importance of depicted clothing (e.g., belts and sashes), personal adornments (e.g., necklaces and bracelets), facial decorations, and other aspects of dress. We find that Medio period symbolism for males and females was based on gender complementarity that combined the productive, reproductive, and ritual activities of men and women within a single symbolic and ritual system. There are instances of overlapping dress shown on males and females (e.g., arm bands), but also sex-based differences (e.g., women wear low horizontal belts across their hips whereas men wear distinctive sandals and elaborate headbands). Aspects of dress also appear to be continued from previous cultures such as the Classic Mimbres (A.D. 1000–1150) and continued into historic northern Mexican and Southwestern groups (e.g., head gear). Ultimately, we find that males are more elaborately dressed and associated with smoking and ritually important symbols. Females are associated with cloud/fertility symbolism, sternal decorations, and birds.

Van Tuerenhout, Dirk

[58] *Maya 2012. Prophecy Becomes History*

The Houston Museum of Natural Science hosted an exhibit on the Maya 2012 phenomenon. This presentation reviews the various stages of preparing an exhibit from initial concept to cutting the ribbon. In particular, the speaker will address developing the storyline, object selection and marketing of the exhibit.

Vandam, Ralf (Koç University - SUNY Buffalo), Peter Tomkins (KU Leuven), Bert Neyt (KU Leuven), Becki Scott (KU Leuven) and Patrick Degryse (KU Leuven)

[79] *Investigating the Late Prehistoric (6500–2400 B.C.) Socio-Economic Landscapes in the Burdur Plain, SW Turkey*

A diachronic intensive survey in the Burdur Plain, carried out by the Sagalassos Archaeological Research Project, revealed that the excavated mound sites, such as Hacilar and Kuruçay Höyük, were no isolated features in the landscape, but part of a large settlement system of both shorter lived hamlets and small villages. The paper presents our survey results from the Neolithic to the Early Bronze Age II period (ca. 6500–2400 B.C.), alongside our outcomes of the provenance analyses (i.e., petrography and p-XRF) of the collected survey artefacts, as well as those from the excavated sites: ceramics, obsidian and metals. This approach would allow us to shed a light on production, exchange networks, and the continuity and change within this period. Furthermore, it is aimed to link the provenance results with the societal developments within the Late Prehistory. How, for instance, did production and exchange relate towards the increasing complexity during the Late Chalcolithic and Early Bronze Age in West Anatolia? The paper also hopes to illustrate the value of a provenance analysis on surface survey material, despite the limitations that it inherently has.

Vandam, Ralf [95] see Willett, Patrick

VanderVeen, James (IU South Bend), Rebecca Gibson (American University) and Sabrina Lute (Indiana University South Bend)**[193]** *Founding Daughters and Wives: Looking For Women in a Male Dominated Artifact Assemblage*

While historical documentation is, for the most part, a deliberate system of record keeping, the archaeological record primarily exists because of the accidental deposition of artifacts. Often these artifacts cannot be coded as representing either male or female use or ownership; however, in certain artifact assemblages where the history of the site is well documented, the researcher can examine the artifacts with an eye toward gendering them and re-creating the story of the people who utilized the site. This paper will examine a collection of artifacts from the city of South Bend, Indiana, which the researchers have coded as belonging to females, including jewelry, buttons, a stocking clip, pen nibs, and other small household materials. The Gilded Age site contained residential and commercial structures later razed by two of the area's founding families, the Studebakers and the Olivers, to create a grassy park-like area. Much is known about the men of these founding families, but little about their wives and daughters. In this paper, the researchers will show evidence about the leisure activities and social associations of these women's lives.

[193] *Chair*

VanderVeen, James [193] see Finnigan, Patrick

Vandrei, Charles [208] see Witt, David

VanPool, Christine [66] see Krug, Andrew

VanPool, Christine, MacLaren Law-de-Lauriston (University of Missouri), Heidi Noneman (University of Missouri) and Andrew Fernandez (University of Missouri)**[67]** *Booze or Food? Experimental Archaeology of Low-Fired Pottery to Examine Tribochemical Processes*

Ceramic ethnographic research from Africa shows that the fermenting of alcohol in low-fired pottery results in a variety of tribochemical processes, which cause pitting in the interior of the vessel. Jars and sherds from the Casas Grandes region (A.D. 1200–1450) have similar pitting, causing researchers to propose that either alcohol or hominy was made in these jars. To evaluate these hypotheses we created low-fired vessels and used them for boiling water, making hominy, fermenting corn (corn beer), and fermenting agave (pulque). We examine the residues and usewear from the various tribochemical mechanisms to determine if they cause the vessels' walls to deteriorate differently (e.g., type of abrasion [pitting or shearing], erosion, corrosion). In particular we determine how hominy (an alkali food) and bacteria-induced fermentation (e.g., *Zymomonas mobilis*) deflates the interior wall. This research helps us better understand the mechanisms that might have resulting in the pitted Casas Grandes ollas.

VanValkenburgh, Parker (Brown University)**[51]** *Landscape, Labor, and the Production of Difference in Colonial Peru: Indios and Negros in the Zaña Valley, 16th through 18th Centuries C.E.*

Historians and historical anthropologists have long suggested that racial and ethnic categories in the Spanish colonial Americas were discursively produced. But it is only recently that historical archaeologists have begun to chart the roles that household practices, economic transactions, and settlement configurations played in their emergence and reproduction. Archaeological excavations and documentary research on sites in Peru's Zaña valley provide new perspectives on how indianess and blackness emerged over the course of nearly three centuries of colonial rule, in tandem with major transformations in the organization of land and labor in the valley. I bring together discussion of colonial initiatives, including settlement planning and financial administration, with evidence of interaction between people of native and African descent, to trace a genealogy of race and social identity in the viceroyalty.

VanValkenburgh, Parker [122] see Kennedy, Sarah

Vanzin, Rudi [205] see Jones, Terrah

Vara, Rachel (University of Texas at San Antonio) and Whitney Lytle (University of Texas at San Antonio)**[226]** *Small Programs, Big Impacts: Benefits of Partnerships in Community Outreach*

The positive impact of public outreach and education to the preservation of archaeological resources has become increasingly apparent to professionals within the field. Outreach programs not only help disseminate the knowledge gained from excavations and research but also how the public can play active roles ensuring this knowledge is not lost. Making archaeology accessible to those outside the field strengthens our ability to neutralize the mass of misinformation found in the media. The University of Texas at San Antonio Center for Archaeological Research outreach program, "LEGACY: Hands on the Past" has developed partnerships to overcome the hurdles faced by small programs. The mission of LEGACY is to enrich the community through public education in archaeology and cultural preservation to promote a collective responsibility for our diverse and shared past. LEGACY is limited to a two person staff and a revolving host of volunteers attempting to serve the population of 1.4 million in San Antonio. Smaller outreach programs, like LEGACY, can lack the staff and funding of their larger counterparts thus creating challenges. This paper will discuss LEGACY's strategies to overcome such challenges by generating partnerships within the university and community to reach a large demographic.

Varga, Virág [149] see Szigeti, Anna

Vargas, Gabriel [139] see Flores-Fernandez, Carola

Vargas Ruiz, Juan (Doctoral Candidate University of Pittsburgh)**[282]** *Social Variability and Leadership Strategies in the Llanos of the Orinoco*

Ethnohistoric descriptions and archaeological evidence suggest that in the Llanos regions of Casanare (Colombia) and Barinas (Venezuela) between the Andes and the Orinoco/Amazon basin, agricultural intensification provided the resources that enabled aspiring elites to pursue their political strategies during prehispanic times. Warfare and feasting were especially important strategies in the early complex societies of Barinas. The presence of nearby highly developed Muisca chiefdoms, however, provided Casanare elites with opportunities for focusing on specialized production and medium-distance exchange that were not available for the inhabitants of Barinas. This presentation explores how the historical trajectories of change differed in two parts of the same broad environmental zone and how the distinct aspects of those differences relate to each other. Central to this discussion is the nature of leadership and the conditions of its rise and transformation through time. The concept of chiefdom as it was originally thought for this region does not capture the huge variability of the social organization of the societies from the Llanos before the arrival of the Europeans.

[282] *Chair*

Varillas Palacios, Rosa Maria [151] see Alexandrino Ocaña, Grace

Vasquez, Josefina (Universidad San Francisco de Quito)

[282] *Can We Measure the Degree of Social Complexity within Quimi Valley?*

The Upper Amazon has been considered a place of weak socio-political integration, along with poor agricultural production, mostly sustained on fishing and hunter-gathering. However, during the last decade, archaeological research carried out in Quimi Valley (Zamora-Chinchipe) has demonstrated the presence of social complexes of about thousands of inhabitants around the valley. While discussion about the existence of sedentary communities during the Integration Period (700–1420 A.D.) has been already settled, we do find imperative to use certain variables to assess the degree of social complexity within these societies. In this case, we propose to utilize material culture collected during excavation of eight archaeological communities through multivariate analysis of artifact types. Quimi Valley communities comprise household areas and gardens reaching the top of mountains which delineate the Córdor Cordillera landscape. Ceramic and lithic remains identified as artifacts and ecofacts have been grouped by household, and then by community with the aim of evaluating how they behaved in terms of density, variability, and dispersion within each community. If inside each community these relationships might be interpreted as simple, those relationships between the communities could be measured as complex.

[282] *Chair*

Vasta, Meredith [265] see Costello, Laura

Vaughan, Andrew (University of Colorado), Dominique Meyer (University of California, San Diego), Jeffrey Glover (Georgia State University), Dominique Rissolo (University of California, San Diego) and Sebastian Afshari (University of California, San Diego)

[20] *Conil Revisited: Aerial Survey and Verification along Quintana Roo's North Coast*

The site of Conil is located in the northern part of the state of Quintana Roo, Mexico. Not far removed from the modern shore of Laguna Holbox, Conil appears to have been inhabited at various times between the Preclassic period and the present day. In AD 1528, the conquistador Francisco de Montejo reported that Conil was a large town of 5,000 houses. First investigated by William Sanders in 1954, Conil has seen little in the way of research since that time. Recent research by members of the Proyecto Costa Escondida is beginning to hint at the extent of the site. This paper presents the findings of the traditional survey work, which has been augmented with an intensive UAS (Unmanned Aerial System) survey, along the results of a small test-pitting program conducted in 2014 and 2015. These renewed efforts at the site of Conil aim to establish the extent and density of occupation at the site as well as trace the development of the site through time. The high resolution of UAS imagery greatly increases what is possible to detect from remotely acquired imagery, though this remote survey does not supplant the need for verification and excavation of detected features.

Vaughn, Kevin [13] see Van Gijseghem, Hendrik

Vaughn, Kevin (UCLA)

[91] *Production and Pilgrimage: Summarizing a Decade of INAA in the Southern Nasca Region*

This poster presents a comprehensive evaluation of INAA work on ceramics from the Southern Nasca Region from the Early Horizon through the Late Intermediate Period. For the first time we present previously unpublished work from the Las Trancas Valley in Nasca. The results from the analysis confirm previous studies suggesting centralized production in the region during the Early Intermediate Period and decentralized production before and after this period. We attribute this long-term pattern to pilgrimage associated with the ceremonial center Cahuachi and associated behaviors centered at the site.

[292] *Discussant*

[91] *Chair*

Vázquez López, Verónica (Universidad Nacional Autónoma de México), Felix Kupprat (Universidad Nacional Autónoma de México), Rogelio Valencia Rivera (Universidad Veracruzana) and Hugo García Capistrán (Universidad Nacional Autónoma de México)

[256] *The Social Function of the Title "K'uhul Chatahn Winik"*

Dozens of Maya ceramics from the Late Classic Period feature the epithet "k'uhul chatahn winik", 'divine person of Chatahn'. Most of these are codex-style vessels of unknown provenance, but some specimens have been recovered during archaeological explorations at Calakmul, Nakbe, and Tintal. Moreover, the same title appears in monumental inscriptions, most prominently at Calakmul, where there are at least four examples. Despite a recent increase in research on this specific title, the different assessments of its meaning and social function are far from being a consensus. In this paper we re-examine the texts which include this epithet and, where possible, their archaeological contexts, which are still under-studied. Based on the presented evidence, we discuss different scenarios, which might explain the title's temporal and spatial distribution. Furthermore, the pairing of the expression "k'uhul chatahn winik" with other titles, as well as its toponymic element are topics to be explored. Finally, we argue that the epithet was used as an Emblem Glyph by the members of a lineage that played an important role at Calakmul and surrounding sites, before and after the arrival of the Kanu'l lords.

Veall, Margaret-Ashley (Research Laboratory for Archaeology and the History of Art, University of Oxford)

[181] *Stuck Like Glue: Case Studies in Assessing the Variability of Hafting Adhesives during the Southern African Later Stone Age*

Variations in design and function of any tool represent adaptive strategies employed by humans to exist within a landscape. With the increased application of both chemical analysis and microscopy to archaeological material, the identification of hafting adhesives, the glue of composite tools, provides a means by which we may evaluate how members of our species existed within dynamic environments and exploited its resources. In southern Africa, the well-preserved assemblages of the Later Stone Age (LSA), though considerably neglected in recent decades, presents a unique opportunity to evaluate raw material procurement strategies related to tool manufacture from an organic perspective. This poster presents the findings of several case studies that are the foundation of a doctoral project utilizing microscopy and molecular analysis in tandem to identify the adhesive composition of hafted technologies from stratified LSA sites located in a variety of geographies and ecologies. This research will attempt to broaden our understanding of the relationship between adhesives, stone tool manufacturing, and the ecology of a surrounding region. The overall aim of this work is to contribute to the long-standing narrative on the appearance and continued application of hafting adhesives in the manufacture of composite tool technologies in southern Africa.

Vega, A. [159] see Hemmings, C.

Vega, Jesus

[253] *From Spanish Shipwrecks to Coastal Development: The Archaeologist as Adventurer, Public Enemy and Philosopher (Did Anybody Say Scientist?)*

Forty years of research in submerged prehistoric sites, shipwrecks, masonry forts, pirates, colonial wars, bridges, piers, lighthouses, eroding highways, fishing communities, estuarine shantytowns, beachfront condos, hotels, resorts, abandoned Olympic swimming pools, deep-water outfalls, trans-oceanic fiber-optic cables, etc., provide first-hand data for my own conflict theory of coastal evolution. From the earliest prehistoric hunters to my own research, the coast is a place of endless activity, conflict, and ephemeral projects. To see the evolutionary processes beyond historic events, I developed the model of Puerto Virgen, a Pleistocene island encompassing Puerto Rico and the Virgin Islands, illustrating tectonic and eustatic factors of coastal change. The sea has no dichotomies of prehistoric vs. historic, socialist vs. capitalist, islander vs. mainlander, natural vs. social scientist. This approach allowed me to see the San Juan Bay channels in historic charts as paleo-rivers, facilitating an explanation for the origin of San Juan Islet and the San Juan Bay Estuary, and predictions for engineers. Like art, sites outlive their creators and are open to interpretation; but they are unconscious reflections of social rather than individual action, yielding measurable data.

Vega-deJesús, Ángel (Centro de Estudios Avanzados de Puerto Rico y el Caribe)

[156] *Use-wear Analysis of Flaked Stone Tools from the Cueva Ventana Site, Arecibo, Puerto Rico*

Functionality of lithic assemblages from Puerto Rico has been traditionally based on tools morphology. These suggestions, which are rarely proven, are put to test in the present study in using use-wear analysis of 87 chert flakes from the early site of Cueva Ventana (2400–1010 B.C.). Experiments were conducted on 28 flakes of the same raw material, in which microscopic traces present on stone tool surfaces were compared with those present on the tools from the site. These experiments included replicating activities on hard and soft wood and the study of their use-wear to interpret economic processes at the site. The results show that the lithic assemblage of the site is not related to the activities and functions suggested by morphology, giving us a cautionary tale regarding interpretations about tools function, and at the same time reminding us of the importance of use-wear analysis for the interpretation of archaeological contexts in the island.

Veit, Richard [284] see Lobiondo, Matthew

Velasco, Matthew (Vanderbilt University)

[206] *Patterns of Cranial Trauma in the Late Intermediate Period Colca Valley, Peru (A.D. 1000–1450)*

Cranial trauma studies of Late Intermediate Period populations (LIP, A.D. 1000–1450) suggest that conflict and social stress were endemic across the south-central Andes, although the nature of interpersonal violence was strongly mediated by local political and social structures. This study explores how individuals buried in elaborate cliffside tombs from the Colca valley of southern Peru experienced violence across the 400-year period preceding Inka imperialism. Cranial trauma rates show high levels of violence within this community, affecting over half of all adults, although less than 5 percent of injuries were lethal. The prevalence of antemortem trauma also decreases significantly from 71 percent (N=66) during the early LIP (pre-1300 A.D.) to around 50 percent (N=80) during the late LIP (post-1300 A.D.). This downward shift coincides with the expansion of cranial modification practices across society, suggesting that the construction and embodiment of a cohesive ethnic identity mitigated the effects of inter-group conflict. Compared to individuals exhibiting modification (N=57) during the late LIP, unmodified individuals (N=22) exhibit trauma rates nearly 1.5 times higher (46 percent vs. 68 percent, $p=0.08$). This paper will also explore the patterning and severity of traumatic lesions to elucidate the role of warfare in ethnogenetic processes of integration and differentiation in the Colca valley.

Velasquez, Veronica, Carlos Salgado (The University of Exeter), Dolores Tenorio (Instituto Nacional de Investigaciones Nucleares) and Melania Jiménez (Instituto Nacional de Investigaciones Nucleares)

[183] *Geochemical analysis of Spanish-style amphorae in the Mexican Caribbean*

Fragments of Spanish-style amphorae known as botijas, which date from the Mexican colonial period, were recently recovered in excavations at the port of Campeche, Mexico. Despite being common finds amongst artefacts recovered from colonial-period sites, they have not been sufficiently studied under an archaeological science approach. This would allow understand aspects related with the production and circulation of these vessels. The sample of botijas that was recovered from excavations in the Baluarte of San Carlos and other areas in the historical quarter of the city of Campeche, enabled insights to some aspects related with the commercialization of Spanish comestibles and the vessels themselves in this remote area of the viceroyalty of New Spain. Through the application of chemical analysis to the fabrics it was possible to identify their provenance and contest previous assumptions about their origin.

Velásquez García, Erik (Instituto de Investigaciones Estéticas de la UNAM.) and Sandra Balanzario Granados (Instituto Nacional de Antropología e Historia.)

[256] *The Rulers of the Kanu'l Dynasty from the Perspective of Dzibanche, Quintana Roo, Mexico.*

This paper discusses data on the presence of the Kanu'l dynasty in southern Quintana Roo, Mexico, particularly at the major site of Dzibanche. The hieroglyphic inscriptions give us explicit testimony on three important Kanu'l characters during the Early Classic: Yuhkno'm Ch'e'n I, Sky Witness, and Yahx ? Yopaat. In addition, we will talk about the presence of another Kanu'l character from Late Classic, associated with the Pom Plaza from Dzibanche, together with an explanation of the associated archaeological and architectural contexts. We also discuss evidence from other eastern sites located around Dzibanche, where we have mentions of Kanu'l rulers before their earliest mentions elsewhere. Finally, we also describe the results of osteological analysis of the tomb we believe to be of Sky Witness, as well as two possible geographic scenarios that could be associated with the phenomenon of Kanu'l royal

courts: one of Eastern Ch'olan filiation, and other of Western Ch'olan affinity.

Velasquez Lopez, Antolin [212] see Barrios, Edy

Velchoff Littlefield, Nancy (Gault/Texas State University)

[274] *Chair*

Vella, Clive [59] see Golden, Charles

Venter, Marcie (Pennsylvania State University)

[216] *Ballgame Ritual: Authority and its Transformation during Late Classic Collapse*

One of the characteristic features of the Classic Veracruz style complex is ballgame imagery on ballcourt panels, molded ceramic vessels, paraphernalia such as yokes, hachas and palmas, not to mention the presence of courts, markers, and stelae or other monuments. Various components of the Classic Veracruz style have been documented throughout the Gulf lowlands and adjoining regions of Mesoamerica. Few examples, however, derive from stratigraphic excavations of in situ deposits. In this presentation, we document the discovery, excavation, and preliminary interpretations of a monument-yoke-offering complex at the site of Matacanela, located in the south-central Tuxtla Mountains. We also present convincing evidence for associated decapitation ritual. We conclude by assessing these new data and offering suggestions regarding the transitioning of authority at the center. We situate the Matacanela complex within the larger region and demographic, political, and economic transformations that occurred at the end of the Classic period.

[264] *Discussant*

[216] *Chair*

Vento, F. J. [159] see Hemmings, C.

Vera, Jaime (INAH Oaxaca) and Nelly M. Robles (Zona Arq. Monte Alban. INAH)

[231] *Recorridos arqueológicos en sitios de la Cañada Oaxaqueña.*

Esta presentación es respecto a los recientes recorridos de superficie en sitios arqueológicos de la región de la cañada oaxaqueña. La dinámica de esta región de Oaxaca muestra una constante ocupación. Desde épocas prehistóricas grupos nómadas ocuparon abrigos en una región tan rico y variado en ecosistemas que permitió el establecimiento de sociedades prehispánicas complejas las cuales se asentaron a lo largo de las zonas de playas de los ríos Grande, salado o el río las vueltas como algunos ejemplos. En época colonial se fundaron misiones en las partes altas donde estuvieron asentados las sitios prehispánicos importantes como parte de la dinámica de conquista de los españoles. En la región se fundaron grandes haciendas que exploraron la riqueza de la región de las materias primas que fueron de alta demanda para la sociedades de ese momento. Ya para el siglo XX con la entrada del ferrocarril la economía a lo largo de la vía fue fuente de ingresos para familias que se asentaron a lo largo del trayecto rico y variado de la región de la Cañada Oaxaqueña.

Vercellotti, Giuseppe [147] see Stewart, Marissa

Verdugo, Cristina [93] see Marquez, Heriberto

Verdugo, Cristina (University of California, Santa Cruz), Lars Fehren-Schmitz (University of California, Santa Cruz) and James Brady (California State University, Los Angeles)

[117] *Sacrifice at Midnight Terror Cave, Belize*

Skeletal data from Midnight Terror Cave (MTC) have recently been used to suggest that individuals with physical deformities would have formed a class of "social outcasts" who were preferentially selected as sacrificial victims. Close scrutiny reveals a number of flaws in the data used. The extraction and sequencing of DNA recovered from a number of the bones in question is used to clarify the situation. Considering the size of the MTC assemblage, well over 100 individuals, the authors are impressed by the lack of obvious deformities. Ethnohistoric data is presented to suggest that the crippled or deformed may have actually been rejected as sacrificial victims.

Verlee, Jotka (Ghent University), Cornelis Stal (Ghent University), Britt Lonneville (Ghent University), Cameron McNeil (City University of New York) and Alain De Wulf (Ghent University)

[121] *UAVs for Archaeology: The Sky is the Limit*

The use of Unmanned Aerial Vehicles (UAV) has seen a tremendous development over the last decade. The department of Geography of Ghent University has deployed these platforms to perform high-level research on the modelling of cultural heritage. The selection of a suitable system was mainly based on compactness and flexibility in terms of transportation and deployment, as well as cost-efficiency.

The platform was deployed in various international field campaigns. The first campaign's objective was the creation of highly accurate and realistic 3D models of the archaeological site of Edzna (Mexico). This allowed the researchers to develop a systematic acquisition methodology, which was enhanced during a field campaign in Thorikos (Greece). With the deployment of the UAV, high resolution ortho-images and elevation models were generated within a limited time frame, covering a reasonable area of the site with a resolution of a few centimetres. Afterwards, the platform was equipped with an auto-pilot system, allowing the autonomous traversing of a series of waypoints. This system was successfully deployed at the archaeological site of Turpan (China). The latest field campaign was conducted at Rio Amarillo (Honduras), and comprised the creation of NGB ortho-images of various sites, in order to uncover hidden archaeological remains.

Vermillion, Lindsay and Carolyn Boyd (Shumla Archaeological Research and Education Cente)

[131] *It's Not an Illustration; It's a Graphic Database: Rock Art Documentation in the Digital Age*

Shumla incorporates new technologies that are revolutionizing rock art illustration and documentation. This presentation discusses the method developed by Shumla to engage these technologies in the production of graphic databases. Using Adobe Photoshop and a Wacom Cintiq Interactive Pen Display, digital Photoshop layers are used to graphically document data for individual figures. These living documents include accurate scale illustrations and the color calibrated and enhanced photographs used to produce the illustrations. Additional layers serve as maps documenting locations of analyses conducted in the field, such as digital microscopy to determine paint stratigraphy, non-destructive elemental analyses of the pigment, and collected sample locations for radiocarbon dating. This approach not only increases data integrity and replicability, it also provides a dynamic, visual record for individual rock art figures and, collectively, entire rock art murals.

Verostick, Kirsten (University of South Florida)**[237]** *Reconciling Disease and the Presence of Infections on Human Skeletal Remains with Emerging Technology in Bioarchaeology*

With advancing technologies in recent years, numerous methodologies are used to identify disease and causes of infection in human skeletal remains. Use of ancient DNA (aDNA) and scanning electron microscopy aid in pinpointing diseases. In particular, ancient tuberculosis and treponemal disease are at the forefront of identification with these new techniques. Recent evaluation shows some of these methods still require refinement, such as the recent discovery of aDNA markers used to identified tuberculosis also representing other bacteria that are not disease causing.

Bioarchaeologists need to work with multiple lines of evidence in order to develop comprehensive ways of studying disease and infection in human skeletal remains. The human skeleton is a wealth of information, and the study of both individuals and populations can inform researchers on a multitude of levels, from diet and activity patterns to stress and human variation. Taking into consideration other subdisciplines of Anthropology, research and information from medical anthropology, primatology and human biology as suggested by Reitsema and McIlvaine 2014, can aid bioarchaeologists in further understanding of processes and formation of disease and infection, making linkages and refinements based on multiple lines of evidence

Versaggi, Nina (Binghamton University (SUNY))**[208]** *Binghamton University and the NYSDOT: A Focus on Research and Outreach*

For over 40 years, the Public Archaeology Facility, Binghamton University (SUNY) has benefited from an uninterrupted relationship with the New York Department of Transportation through projects administered by the NYS Education Department & New York State Museum. This started out as a non-competitive partnership with some SUNY campuses but became a competitive bidding situation about 20 years ago. The underlying principles of the contract call for a research focus that makes archaeological results widely available and maintains that information within an accessible public domain. PAF is strongly committed to these principles and implements them for our DOT projects. Sites found within narrow rights-of-way become potential field school sites; field school sites become research projects for community outreach programs; community outreach fosters public education and an empathy for historic preservation. Our DOT projects have also provided hands-on training and thesis data for graduate students, the future practitioners of CRM. This paper will explore our decades long relationship with NYSDOT and how this contributes to the advancement of knowledge about the past through academic research, student training, and community outreach.

Vestal, Patrick [6] see Sherwood, Sarah

Vetrisano, Lucas (University of Buenos Aires)**[204]** *Blade Production at El Sosiego Locality, Southern Patagonia, Argentina.*

Evidence for blade production has been found in the Santa Cruz River basin, with chronologies between ca. 1900 and 1100 years B.P., although not all the cases exhibit the same characteristics. Differential frequencies in blade numbers have been used to argue that the Santa Cruz River was a frontier between human populations, but there is also variability in knapping methods.

I will focus on El Sosiego locality, which includes an archaeological site dating to ca. 1900 yr B.P. and surface materials with similar technological characteristics. It represents one of the few cases in the region with consistent evidence for blade production, including prepared blade cores and a higher than usual blade frequency, both as blanks and tools. It also exhibits a higher level of shaping of the cores, including preparation of the flaking platform and the flaking surface, resulting in multiple blade extractions per core, and blades with one or two ridges parallel to the sides.

This study is used as a mean to generate expectations to contrast with other sites with scarcer blades in order to evaluate variability in blade production in relation to frequencies and knapping methods.

Vianello, Andrea (independent researcher)**[81]** *The Introduction of Metallurgy in Sicily: Preliminary Data using a pXRF*

Several artifacts representing the oldest metals known in Sicily (Copper to Middle Bronze Age) together with many from the Late Bronze Age have been analyzed using a portable XRF to determine their composition. These are nearly all of the early metal artifacts existing in Sicilian museums. Multiple spot analyses have been performed and averages obtained to alleviate potential heterogeneities on the surface of metals, ensuring consistency and validity of the data. Among the materials, there were many swords and daggers, with a more limited selection of ornaments. Evidence of metalworking within Sicily is rare, as are metal vessels and ingots, even if scraps are considered.

The preliminary results show a marked use of nearly pure copper in most cases, especially for the Copper and MBA artifacts. They also reveal a very late introduction of alloys made of added tin or arsenic, with swords in pure copper still present in Late Bronze Age funerary contexts. Metals were probably not widely available until the Early Iron Age, because there are no prehistoric ore sources known in Sicily. A comparison with other areas rich in metals shows marked differences. Future research will target Calabria, the nearest region culturally and geographically with more mines.

Vianello, Andrea [81] see Tykot, Robert

Vicencio Castellanos, Gabriel [179] see Lopez Corral, Aurelio

Vicencio Castellanos, Alonso Gabriel [179] see Serra Puche, Mari Carmen

Vickruck, Cory [199] see Matheson, Carney

Vidal, Estefanía [76] see Ballester, Benjamín

Vidal Montero, Estefania (Fulbright-CONICYT Chile, Department of Anthropology, University of Chicago), Mauricio Uribe (Departamento de Antropología, Universidad de Chile), Ester Echeñique (School of Anthropology, University of Arizona) and Andrew Menzies (Universidad Católica del Norte, Chile)

[57] *Pottery Production, Circulation and Exchange during the Formative Period in Tarapacá, Northern Chile*

In the area commonly known as Pampa del Tamarugal, in the middle portion of the Atacama Desert, the valleys of Tarapacá, Guatacondo, and the oasis of Quillagua have been important spaces for characterizing the Formative period in northern Chile. In this paper, we present the results of pottery analyses from this region, comprised by samples obtained from residential and ceremonial contexts, as well as transitory sites along prehispanic routes (Fondecyt Project 1130279). The purpose of these analyses is to offer a detailed examination of the ceramic technology of the period through integrated approaches, including traditional typological classifications and quantitative characterizations, as well as compositional analyses aimed at understanding the chemical and petrographic qualities of the different ceramic types of the area. These results provide new data for the study of the development of pottery during this period in Tarapacá, as well as its links to the Formative as a historical phenomenon in the South Central Andes, allowing us to discuss and interrogate the processes of production, movement and exchange of pottery from ca. 900 B.C.E. to 900 C.E.

Viel, Rene [237] see Sterling, Stephanie

Vierra, Bradley (Statistical Research Inc)

[170] *The Origins of Agriculture and Neolithic in the American Southwest: The View from Western Europe*

The transition from foraging to farming is certainly one of the most dramatic processes in human history. The use of domesticated plants spread widely across Western Europe from the Near East, and across the American Southwest from Mexico. Research in Western Europe has traditionally focused on the movement of farming communities across the region which displaced or subsumed local foragers. Recently various aspects of this process have been discussed including climate change, the expansion of farming populations, the integration of cultigens into local foraging economies, the coexistence of foragers and farmers, language dispersal, sedentism, diet breadth, the effects of a farming economy on fertility and health, and the importance of social or communal activities. This paper will take the lessons learned from this research in Western Europe and see how they can be used to help understand a similar process in the American southwest.

Viganò, Claudia (Institute of Evolutionary Medicine, University of Zurich), Gülfirde Akgül (IEM, University of Zurich), Frank J. Rühli (IEM, University of Zurich) and Abigail Bouwman (IEM, University of Zurich)

[103] *Ancient DNA Analysis to Investigate the History of Malaria and Malaria Genetic Adaptations in Europe*

Historical records and epidemiological studies can be a wealth of information about ancient diseases, nevertheless in some cases DNA evidence is also needed. The data showing high frequencies of malaria genetic adaptations (MGA) in modern and historical populations testify to the presence of malaria in the past along the Mediterranean coast. However, neither modern epidemiological data nor historical records can explain the differences in MGA frequencies that we observe in some regions. Analyzing the DNA of individuals who inhabited these areas in the past can help better understanding the history and evolution of malaria and its genetic adaptations in Europe. In this study, samples from three European regions with different malaria history and genetic resistance correlation have been analyzed: Sardinia, former endemic malaria island with presently high frequency of MGA, Corsica, with a similar history of endemic malaria but a low frequency of genetic resistances and Switzerland, historically a non-endemic malaria country with low frequency of MGA. Protocols to detect Plasmodium sp. DNA, G6PD A- and β -Thalassemia were designed and optimized and ancient G6PD and beta-globin sequences were recovered from skeletons over the last 2000 years. Here we present the methods used and the preliminary data obtained.

Vilar, Miguel [204] see Alfonso-Durruty, Marta

Vilar, Miguel (National Geographic), Flavia Morello (Universidad de Magallanes) and Marta Alfonso-Durruty (University of Kansas)

[206] *Migration Waves, Genetic Drift and the Peopling of Fuego-Patagonia*

The colonization of Fuego-Patagonia is filled with questions of origin, timing and migratory routes taken by early colonizers (inland hunter gatherers) and later migrants, the highly-specialized marine populations. Our study compares mitochondrial DNA sequences taken from 20 prehistoric samples (teeth) ranging in age between 7,200 and 1,000 cal yrs B.P. (before present) to results from 38 modern Patagonians (Kaweskar, Mapuche-Huilliche and Yagan) who participated as part of the Genographic Project.

The prehistoric results show three distinct Native American haplogroups (C1, D1 and D4h3a), whereas modern participants were C1b, C1b13, D1, D4h3a, B2i2. The prevalence of haplogroups C1, D1, D4h3a in the modern and ancient samples shows consistency, while the higher diversity in modern groups reflects mixing from Mapuche populations from central Chile and Argentina, introducing lineages C1b13 and B2i2. Among the Yagan, haplogroups C1b and D1 dominated, likely reflecting processes of early settlement followed by genetic drift, exacerbated by the genocide committed against them during historical times. The oldest sample (7,200 B.P.) was also C1. Among the modern Kaweskar, 60 percent were D4h3a, a lineage also found in prehistoric marine settlements and among modern coastal groups further north, suggesting the Kaweskar were possibly part of the second marine-adapted migration.

Vilches, Flora (Universidad de Chile) and Hector Morales (Universidad de Chile)

[135] *From Herders to Wage-Laborers and Back Again: Mountain Mobility in the Puna of Atacama, Northern Chile*

Towards the end of the 19th Century, the subsistence mode of indigenous Atacameño society transited from an agricultural-pastoral economy to a more diversified capitalist-based one. This transformation resulted from a growing mining industry in the northern region of Chile. While part of the indigenous population migrated to the new productive enclaves, others remained in their territory, especially the herders of the puna. These highlanders, however, also

took part of the new capitalist order as wage laborers in sulfur mines and llareta exploitation companies, all located in the mountain range. From archaeological research and oral history, we have detected the constant movement of indigenous laborers between different companies depending on the benefits that they offered. Such "transhumant" mobility was possible due to the cultural capital of these peoples, which translated in a deep knowledge of their territory as well as outstanding physical strength and endurance, all of which enabled them to accomplish hard work in a harsh environment. We contend that highlanders' cultural capital operated as a means of resistance to poor labor conditions. Indeed, along with their constant itinerancy, Atacameños managed to maintain wage labor hand in hand with Andean practices such as earth rituals and the "flowering" of herds.

Villasenor-Marchal, Antonio [207] see Kuzminsky, Susan

Vinson, Dale [148] see Chisholm, Linda

Vint, James (Desert Archaeology, Inc.) and Fred L. Nials (Desert Archaeology, Inc.)

[55] *Riparian Oases and Environmental Variation during the Archaic Period in Southern Arizona, 4000 to 2000 B.P.*

Late Archaic forager-farmers in the Sonoran Desert lived in a resource-rich but water-poor environment. Rivers that flowed through major valleys supported lush riparian habitat, creating linear oases bounded by foothills covered by desert scrub vegetation and "sky island" mountain ranges. Hunting and foraging in these diverse ecosystems supported small but stable populations throughout the region, and by 4000 B.P. low-level maize agriculture was incorporated into the subsistence diet. Irrigation-based agriculture on river floodplains was developed by 3500 B.P., and became an integral though not central part of the subsistence economy. Rivers and their riparian corridors were vulnerable to climatic variation, in particular changes in precipitation regimes due to ENSO fluctuations. We present a reconstruction of the Santa Cruz River in southern Arizona as a case study of human response to local environmental variation. Geomorphic and archaeological data combined with proxy climatic measures based on tree ring records are used to infer potential effects of river regime on forager-farmer communities in the Tucson Basin. Chronological analyses reveal change in early agricultural settlement locations attributable to changes in river conditions. We conclude that the mixed foraging-farming economy minimized risk from local environmental variation, and remained a viable subsistence strategy for some 2,000 years.

Vitry, Christian [259] see Cruz, Pablo

Vogel, Melissa [92] see Buhrow, Kristin

Voigt, Eric [243] see Luhman, Hope

Volta, Beniamino (University of California, San Diego) and Joel D. Gunn (University of North Carolina at Greensboro)

[59] *The Political Geography of Long-Distance Trade in the Maya Lowlands: Comparing Proxies for Power Structure and Exchange Networks*

A critical issue for understanding the relationships between Maya political geography and long-distance economic exchange is that many trade goods are archaeologically invisible. Iconographic depictions of feathers, cacao, and textiles—along with evidence for production and the sheer biological necessity of salt—indicate that these goods were widely traded alongside more durable items such as obsidian, jadeite, marine products, and ceramics. This paper explores the possibility of using political networks as a proxy for the flows of undetectable commodities. Such a hypothesis hinges on the notion that exchange systems and power relations are both reflections of the underlying structure of the political economy. We use data from hieroglyphic inscriptions and elite ceramic exchange to model the shape and extent of political networks at different moments in time. We test the proxy hypothesis by comparing these reconstructions against studies of obsidian exchange networks in the Maya region. We then extend the model of economic flows to perishable commodities using least-cost path calculations to evaluate relative efficiency and potential variations among trade routes for different commodities. In particular, we focus on reconstructing the political geography of long-distance exchange in the Elevated Interior Region of southern Campeche and northern Peten.

Von Baeyer, Madelynn (University of Connecticut)

[19] *How Do Households Work? Examining plant use during the Late Chalcolithic at Çadır Höyük, Turkey*

This paper presents archaeobotanical data from the Late Chalcolithic (LC) archaeobotanical assemblage at Çadır Höyük, a mound site on the north central Anatolian plateau with almost continuous occupation from the Middle Chalcolithic through the Byzantine period. Architectural and metallurgical evidence indicate that during the LC, Çadır was developing as a regional rural center, which makes it an ideal site to study the role that households occupied during in emerging systems of social hierarchy and complexity. This study addresses how understanding the depositional and taphonomic processes that acted on the macrobotanical plant remains can inform studies on household subsistence economies, organization of labor, and differences in plant use between households.

von Nagy, Chris [230] see Russ, Jon

von Nagy, Christopher (UNR / FSU)

[230] *The Urban Origins Project at Quiotepec-Oxotitlán, Guerrero*

The large Early to Late Formative site of Quiotepec-Oxotitlán, best known for Oxotitlán Cave and its associated Middle to Late Formative polychrome murals, is the site of on-going archaeological research since 2012 by the Urban Origins Project. Our goal is twofold: to develop a richly detailed documentation of the art and its physical and chronological context at Quiotepec-Oxotitlán and to investigate the political economic underpinnings of the artistic production and possible elements of a ritual economy at the site and within the broader region. Over the course of three seasons of research, we have focused on the development of a new, high resolution and three-dimensional record of the art and its immediate archaeological context, as well as the study of the larger Formative community in the surrounding region. Our research has involved satellite and drone-based remote sensing, ground mapping, geophysical prospection, and exploratory excavations. In this paper, we discuss our use of photogrammetric and structure-in-motion techniques coupled with micro drone-based aerial survey to develop a detailed three-dimensional map of the site and its natural and architectural details as one element of our

broader research at the ancient community.

[230] *Chair*

Von Nicolai, Caroline (Ludwig-Maximilians University Munich)

[188] *Long Distance Networks in Neolithic Europe*

In Neolithic Europe, certain artefacts made of high-quality stone were distributed over considerable distances. For example, Jade axe heads, which originate from the Alps, were found between 5300 and 3700 B.C. in small numbers all over Central and Western Europe as far as Brittany, Scandinavia and the British Isles, i.e., up to 1700 km from their original quarries. Likewise, between 4500 and 2200 B.C. single daggers, arrowheads and other artefacts made of flint that came from Northern Italy have been recovered in Switzerland, Southern Germany and Austria north of the Alps. Both find groups differ from others regarding their wide distribution, their relatively rare occurrence, and—especially in the case of the jade axe heads—regarding their use and find contexts. They can therefore be interpreted as socially significant objects. Their wide diffusion suggests the existence of supraregional networks and communication spheres. Within these networks, a certain intercultural sense of coherence determined which raw materials were particularly appreciated, and which objects were thought to be valuable and socially significant. The aim of this paper is to study how such networks worked and which exchange mechanisms contributed to the large distribution of the artefacts under consideration.

Von-Nagy, Christopher [230] see Schmitz, Kirk

Voytek, Barbara

[81] *Romancing The Stones: Analyses of the Chipped Stone from the Tisza Culture Site of Hódmezővásárhely-Gorzsa, Hungary*

The chipped stone tools from the Gorzsa tell in southeast Hungary have been studied over a period of 15 years with effectively five study seasons (1999, 2000, 2001, 2011, and 2012). A total of over 3,000 chipped stone artefacts were examined in terms of raw material, technology, and microscopic evidence of use, during a study which took place at the Mora Ference Museum in Szeged. This paper provides the study objectives, methodology, and findings. Using lithic data from the site, the author, together with Elisabetta Starnini (University of Torino, Italy), examined social and cultural developments that characterized the Late Neolithic. It was clear that the inhabitants of the site of Hódmezővásárhely-Gorzsa had a good knowledge of, and access to, the raw materials that they chose. By the time of the Tisza archaeological culture represented at the site, the landscape had been enculturated. The agro-pastoral subsistence base had been established. Connections with neighbouring territories, through exchange and/or trade, had been developed. Transformation continued, however, within the society particularly in terms of the development of social relations and the growth of socio-economic complexity.

Vrac, Mathieu [211] see Burke, Ariane

Vranich, Alexei (Cotsen Institute)

[107] *Nighttime Sky and Early Urbanism in the High Andes*

Popular understanding of the relationship between the rise of early civilization and astronomy emphasizes the observance of particular moments in the cycle of the sun. This pattern is particularly strong at the Bolivian highland Andean site of Tiwanaku (A.D. 500–950), a megalithic site known for its "Temple of the Sun," "Gateway of the Sun," and solstice festival that attracts thousands. Recent research throughout the Titicaca Basin documents a wide range of celebrated astronomical observations during the initial development of social complexity. While early sites developed at the confluence of such predictable variables as nearby water sources and fodder for animals, they were also preferentially located where alignments between the nighttime sky and sacred mountains could be seen. This initially modest public architecture formed the setting for structured encounters between transhumance groups and dispersed sedentary peoples. Most of these locations were cyclically occupied, with communal gatherings defined by small-scale architecture. A rare few became the nucleus for settlements that reached monumental proportions. The rituals that defined social interaction in these locations, as well as the relationship of attendees to the sacred world, developed into the complex institutions that became the basis for the development of the primary state.

Vujevic, Dario [189] see Zaro, Gregory

Wackett, Joshua and Sofia Chacaltana Cortez

[219] *Ceramic Production in the Colonial Moquegua Valley*

Recent scholarship demonstrates a growth in archaeological analysis of Spanish colonial reducciones (which is the resettlement of several small villages into one larger Spanish controlled town) in Andean South America. Critical to understanding the impact of reducciones on indigenous populations is examining the ways in which the production and circulation of craft goods was reworked with Spanish conquest. In characterizing the elemental composition of archaeological pottery, Laser Ablation Inductively Coupled Plasma Mass Spectrometry (LA-ICP-MS) is an invaluable tool in examining resource procurement as well as long distance exchange in the past. In this paper, I report new data derived from LA-ICP-MS analyses of two sites in the Moquegua Valley, Peru: Torata Alta and Sabaya. Both sites were founded during Inca control of the valley but were also occupied into the seventeenth century and have strong Spanish colonial components. Analyzed samples included early colonial Period ceramics that were excavated from two structures identified as indigenous (Van Buren 1993) at Torata Alta and two structures at Sabaya. Comparing the data with the existing ICPMS data base on locally available clays, I examine differential resource procurement as well as access to imported goods among indigenous and Spanish communities in early colonial Moquegua.

Wagner, Friedrich [145] see Wagner, Ursel

Wagner, Ursel (TU-Muenchen), Friedrich Wagner (TU Muenchen), Werner Haeusler (TU Muenchen), Benilde Costa (University of Coimbra) and Jean-Yves Blot (Universidade Nova de Lisboa)

[145] *Mössbauer and XRD Study of Roman Amphorae Buried in the Sea for Two Millennia*

A decade ago Roman Haltern 70 amphorae were found in the sea near Cortiçais on the Atlantic coast of Portugal. They stem from a shipwreck dated to

between 15 B.C. and 15 A.D. We have studied fragments of these amphorae by Mössbauer spectroscopy and X-ray diffraction to look for changes caused by two millennia of exposure to seawater. For comparison we studied Haltern 70 type amphorae excavated on land at Castro do Vieito in the north of Portugal. The sherds show a layer structure with 2 to 3 mm thick soft buff outer layers and a harder gray core. The different layers were studied by Mössbauer spectroscopy and X-ray diffraction. The Mössbauer spectra of the surface layers show that up to 80 percent of the iron is present as goethite particles which are superparamagnetic at room temperature but exhibit magnetically split spectra at 4.2 K. The goethite is too fine-grained to be detected by X-ray diffraction. The spectra of the cores contain up to 40 percent of ferrous iron and resemble those of the land-buried amphorae. The results show that the iron in the outer layers of the sherds converted to goethite under the prolonged influence of the seawater.

Wagner, Mark

[175] *Chair*

Wait, Gerald

[89] *Discussant*

Wake, Thomas [132] see Lightfoot, Kent

Waldron, Tony [187] see DuBois, Erin

Walker, Renee (SUNY Oneonta) and Tanya Peres (Florida State University)

[9] *The Ups and Downs of Uploading Data to the Eastern Archaic Faunal Database with the Digital Archaeological Record (tDAR)*

Uploading faunal data from eastern Archaic sites to the Digital Archaeological Record (tDAR) as members of the Eastern Archaic Faunal Working Group (EAFWG) was a very exciting prospect. We are pleased to be involved in a project that will address significant questions about animal use during the Archaic period. However, making the data comparable entailed some challenges and compromises. While most zooarchaeologists agree on taxonomic designations, developing ontologies for elements, portions, fragments, modification, and other areas proved challenging. For example, decisions had to be made about using existing ontologies or creating new ontologies. In the case of the taxonomic designations, much of the existing ontology could be used. Conversely, a new ontology for the Eastern Archaic subperiods had to be developed. The sites of Dust Cave and site 40DV7 illustrate how data from two different sites collected by two different zooarchaeologists can be integrated to answer questions regarding the use of aquatic vs. terrestrial taxa during the Archaic period in the southeast.

Walker, William (New Mexico State University) and Chadwick K. Burt (Vista Sciences, Las Cruces, New Mexico)

[18] *Pottery Agents: A Case Study of Nonhuman Beings from the American Southwest*

Since the enlightenment western approaches to material culture have distinguished between natural and supernatural processes. This demarcation produces archaeological perspectives at odds with ethnographically known cultures and likely past ones. Contemporary Native American ontologies emphasize the animacy of things such as architecture and pottery. An important theoretical question therefore, is what social relationships did people establish with material objects, and how did these associations change through time? Theory based on this approach to material culture would dramatically impact a range of fundamental archaeological assumptions about analytical categories. In this paper we offer a case study from the American Southwest focused on the life history of mortuary practices involved with placing ritually broken pottery vessels (i.e., kill holes) with the dead. Starting with the Hohokam in the 10th century, we trace this custom through its apex with the Mimbres during the 11th century and beyond in various prehistoric populations including the Anasazi, Mogollon, and Salado into the historic period at Hopi and Zuni. We then explore the implications of this tradition for study of past object agency and the significance of considering indigenous ontologies. We argue that these mortuary vessels likely existed as nonhuman beings in their own right.

Walker, Martin P. [98] see Craib, Alexander

Walker, Debra (University of Florida)

[109] *Moderator*

[158] *Discussant*

Walker, Jeff, Don Hann (US Forest Service), Cathy Lindberg (US Forest Service) and Alicia Beat (Us Forest Service)

[165] *Celebrating Partnerships and Investigating Historical Cultural Diversity in the Pacific Northwest Region of the U.S. Forest Service*

The Pacific Northwest (PNW) Region of the U.S. Forest Service has engaged partners and volunteers from diverse groups for over four decades: Friends groups to restore lookouts and log cabins; Passport In Time projects to engage the public in archaeological site testing; and universities, museums and independent researchers to investigate and interpret a wide variety of sites. We collaborate closely with the Native American tribes to preserve and protect their heritage and places of cultural and religious significance. PNW Asian communities have partnered with the USFS to explore their deep histories on Western public lands, with particular interest in the Chinese diaspora and Japanese WWII Internment. The PNW Region has identified unique African American historical logging communities, and evidence of Greek, Basque, Italian laborers sites. As we celebrate the 50th anniversary of NHPA, we are examining historic records and archaeological evidence to identify distinguishing markers for other distinct ethnic populations who have had a presence on the landscapes the USFS manages.

Walker, Martin (University of Tennessee, Knoxville) and Thaddeus Bissett (Cultural Resource Analysts, Inc. (CRA))

[277] *Working Within the Curves: Examining Issues of Resolution and Accuracy When Using Sea-Level Curves in Archaeological Contexts*

Sea-level curves have been one of the main tools used within archaeology to understand human settlement patterns in coastal environments. Questions remain, however, about which curve (or curves) are most appropriately used both at different geographic and temporal resolutions. In order to evaluate these differences in resolution, we examine 161 radiocarbon dates from 32 shell rings from across the lower Atlantic and Gulf coasts. We then plot them against a regional high-resolution reconstruction of past sea levels and local sea-level curves to assess curve-specific differences in predictions about sea levels, shoreline migration, and the extent of intertidal zones near dated shell rings between 6000 and 2500 cal B.P. This paper furthers the discussion regarding coastal sea-level curves and the balance between hypothesis testing and understanding the limitations of existing data sets.

Walker, John (UCF Department of Anthropology)

[282] *Mapping a Large Scale Amazonian Landscape using GIS*

Among the many challenges for landscape archaeologists is the “palimpsest” nature of the landscapes that they try to study. Archaeologists around the world have long been at work using GIS to study a wide range of questions across scales from meters to thousands of kilometers, and from single occupations to thousands of years. Thinking of archaeological landscapes as a palimpsest uses the recognition that connecting individual landscape features exclusively to a single moment or period of time is not possible. In a case study from the Southwestern Amazon, a landscape of earthworks that are now accessible in public domain imagery, was mapped in detail over about 10,000 km², and can now be more easily analyzed at several scales. A palimpsest interpretation of this landscape, based on this more comprehensive dataset, makes possible new interpretations of the connection between spatial patterns and Amazonian histories, at several scales.

Walker, Karen (Florida Museum of Natural History), William Marquardt (Florida Museum of Natural History), Lee Newsom (Pennsylvania State University) and Merald Clark (Florida Museum of Natural History)

[290] *The Pineland Site Complex: A Southwest Florida Coastal Wetsite*

South Florida is internationally known for its waterlogged sites, Key Marco and Fort Center being perhaps the best known. In 1990, the Florida Museum of Natural History was given a marvelous carved wooden bird figurehead, 27.4 cm in length, later interpreted as part of a mechanical waterbird figurehead (ca. A.D. 865–985). It had been found in 1971 in a spoil pile adjacent to a mosquito-control ditch at the southern boundary of the Pineland complex. That such an important but normally perishable artifact was found in good condition had us wondering what Pineland’s potential was for presenting wet deposits. Less than two years later, we discovered an intact waterlogged midden along one of the earlier (ca. A.D. 200–250) shorelines. We excavated a 4-x-1-m area (30-cm depth) of it, recovering unburned wood, cordage, and seeds, in addition to the usual shell, bone, and ceramic materials. More recently, in 2015 at another shoreline location, we excavated a 2-x-3-m area (40-cm depth) of waterlogged midden (ca. A.D. 500–600), again recovering unburned wood, seeds, and cordage, including a large fragment of knotted cordage. We comment on these discoveries in terms of intra-site location and temporality, and the predictability of future finds at Pineland and elsewhere.

Walker, Martin [55] see Anderson, David

Waller, Joseph (PAL) and Alan Leveillee (PAL)

[42] *Villages, Horticulture, and the Narragansett: Native American Settlement and Resource Exploitation along the Southern Rhode Island Coast ca. 1300–1400 A.D.*

The Salt Pond archaeological site was identified during environmental review planning for a proposed residential subdivision in the 1980s. Archaeological investigations in the 1980s, 1990s, and early 2000s provided glimpses into Native American settlement and subsistence strategies within Rhode Island’s coastal zone. Continued multi-disciplinary study of this culturally significant place has provided a wealth of new information on the late pre-contact environment, Native American village settlement, structure, seasonality, coastal resources exploitation, horticulture, and the formation of Narragansett Indian territory during the centuries leading up to European contact.

Waller, Kyle [66] see Krug, Andrew

Waller, Kyle (University of Missouri)

[275] *Gene Flow at Paquime: Cranial Non-Metric Approaches to Regional Social Interactions*

The origins of the Casas Grandes phenomenon remain an essential, if elusive pursuit for southwest/northwest archaeologists. The explanations are numerous, and include migrations, in-situ development, local emulation of prestigious Mesoamerican traits, and several different combinations therein. In this study, a series of biodistance analyses are conducted using different cranial and dental metric and non-metric traits. Several hypothesized sources of migrants and cultural transmission are compared to Viejo period and Medio period skeletal samples to investigate patterns of prehistoric gene flow, and to examine how they change during the Medio period transition. Routes of transit between sites are calculated by least cost and waterway analyses to control for patterns of isolation by distance.

R-Matrix analyses suggest several meaningful patterns. First, Paquime is more phenotypically similar to West Mexican and Mimbres populations than would be expected based upon geographic distances. Second, Paquime has greater than expected phenotypic variance when compared to Viejo and other regional Southwestern populations. Lastly, these patterns appear to differ when conducting analyses by sex, indicating patterns of migration or exogamy. The implications for understanding the development of Paquime, and its interactions with late prehistoric Northwest and Southwest groups are considered.

[275] *Chair*

Wallis, Neill [8] see Donop, Mark

Wallis, Neill (Florida Museum of Natural History)

[18] *Materialities of Religious Transformation from Coast to Coast in Pre-Columbian Florida*

During the seventh century in Florida, a decisive shift is apparent in the ways people were positioned in relation to burial sites and how they manufactured and interacted with portable objects. The transition ushered in the Weeden Island archaeological culture, well-known for the prevalence of exquisitely crafted pottery vessels and a characteristic mortuary regime widely adopted across the Gulf coastal plain and beyond. This paper examines the historical moment of change in terms of shifting material nodes in relational networks constituted through burial mounds and their contents. From the vantage point

of three distinctive coastal regions—the eastern panhandle, the lower Suwannee River, and the Lower St. Johns River—diverse ways of navigating changing relational fields through various loci of spiritual power are explored. Considerations include the forces exerted by the materiality of existing (pre-seventh century) burial mounds, the orientation of mounds in relation to other landscape and celestial features, the depositional structure of mounds, and the distributed networks enacted through pottery vessels, particularly three-dimensional effigies of birds and humans with singular referents. This multi-sited analysis illustrates the dynamic interplay of local and regional material intercessions of spirit worlds and the cosmos.

Wallman, Diane (University of South Florida)

[100] *Histories and Trajectories of Socio-Ecological Landscapes in the Lesser Antilles: Implications of Colonial Period Zooarchaeological Research*

The arrival and colonization of the Caribbean by Europeans beginning in the fifteenth century transformed the already dynamic landscapes of the region. To accommodate the slave-labor supported colonial plantation system and its orientation towards market exports, the region witnessed the introduction of exotic plants and animals, creating a 'creolization' of flora and fauna. In this paper, I discuss how environmental archaeology contributes to a nuanced and diachronic understanding of the human-environment dialectic in the West Indies; such research also serves to delineate the timing of introductions and extinctions, and identify any changes in biodiversity and ecosystem health. Further, under colonial rule, disenfranchised and enslaved communities developed informal ways to resist or respond to the dominant system, such as artisanal fishing and agriculture. Many of these economic practices continue today, and are now vulnerable to anthropogenic climate change, habitat destruction and overfishing. Zooarchaeological data can elucidate these localized histories and help explain how the colonial past continues to impact current patterns of natural resource use and modern socio-ecological landscapes. To this end, I present faunal data from three sites in the Lesser Antilles to illustrate how well structured research designs allow for the robust exploration of these problems.

[100] *Chair*

Walsh, Matthew [171] see Prentiss, Anna

Walsh-Haney, Heather (Florida Gulf Coast University) and Victoria Sanford (Lehman College)

[24] *Femicide and the Struggle to Fight Impunity in Guatemala*

The mortality rate of women in peacetime Guatemala has reached the level documented at the height of the genocidal war that took 200,000 lives. These female victims tend to be between 16 and 30 years-old with most of these brutal killings occurring within or near Guatemala City. To paraphrase UN Rapporteur Philip Alston, female homicides are only the beginning of the cost because a society that lives in fear of killing is unable to combat impunity and cannot get on with life and the business of creating a just society.

Indeed, impunity is an invitation to commit crime and promote lawlessness. In order to document Guatemalan femicide and impunity, Drs. Sanford and Walsh-Haney observed system-wide failings over the last 8 years that included poor or absent documentation of physical evidence as well as the lack of judicial will to process femicide cases. As a case on point, these anthropologists accompanied the family of a femicide victim to the Inter-American Court of Human Rights in Spring 2015. This presentation discusses the frontier landscapes of a family seeking justice and a court attempting to dismantle political structures that support impunity and devalue female lives.

Walter, Tamra, Valentina L. Martinez (Florida Atlantic University) and Sari Turcotte (Texas Tech University)

[204] *Clay Matters: Pottery Changes at C4-084B, a Manteño Site in the Cloud Forest of El Pital, Coastal Ecuador*

Recent archaeological investigations at site (C4-084B) within the Rio Blanco valley in coastal Ecuador yielded significant data regarding Manteño occupation of the region during the Integration Period (A.D. 700–1500). Situated in a cloud forest in the community of El Pital, the site contains the remnants of masonry residential structures along with evidence for at least two different occupations. Phase I, the earlier occupation, is separated from Phase II, the later occupation, by a gravel fill. Generally, the formal and stylistic ceramic analysis suggests cultural continuity between the phases. Specifically however, the study implies that the early Phase I Manteño pottery differed in decorative techniques from Phase II ceramics. This poster explores the potential these new data have for helping outline the Manteño occupation in the cloud forest. The poster also examines intra-site correlations and the meaning such changes in decorative ceramic techniques might convey.

Walters, Michael (University of Oklahoma)

[7] *Shaft Tombs in the Caddo World*

Shaft tombs are an interesting McCurtain Phase (1300–1700 A.C.E.) mortuary ritual in the Caddo region. The tombs are dug into the center of preexisting mounds and around 8-10 individuals are supine, primarily interred, and facing the same direction. The shaft tombs could have been constructed as a revitalization ceremony after a period of abandonment from a site. Alternatively, the tombs could have functioned as a termination event at the end of an occupation for these sites. However, the purpose of the tombs are unclear. The goal of this project is to compile data from all shaft tombs in the Caddo region to test hypotheses about the place-making function of shaft tombs. Variables such as the date the shaft tomb was constructed and periods of settlement will help to address this question. Other variables (age, sex, artifacts, etc.) will be used for further inquiries. Data will be gathered from all known published sources.

Walters, Kristina (The University of Montana) and Lorena Craig (The University of Montana)

[247] *The Co-phylogeny of Earth-Diver Creation Myths and Language: Insights into Evolution Processes and Migration*

This paper presents results from co-phylogenetic analysis of Earth-Diver creation myths and regional language history. This study seeks to understand process of dissemination of traits of historically congruent cultural traditions across time and geographic space. We hypothesize creation myths and language have parallel evolutionary history and form a combined set of core cultural traditions. Thus creation stories and language will map closely together. Results from phylogenetic methods and other statistical analysis of data sets will demonstrate that in the case of language and creation myths, evolutionary processes of culture traditions are a unified system. Creation myths, similar to language, are subject to conformity bias and less prone to horizontal transmission because errors in transmission will be subject to correction. In a broader sense, co-phylogeny studies, like this one, will provide new insights into evolutionary processes of multiple cultural traditions. Additionally, branching trees from Earth Diver creation myths found in both Eurasia and North America are suggestive of an early migration to the new world. Therefore our research adds to existing studies of early migration patterns to the New World and population spread across the North American continent.

[247] *Chair*

Walton, David (Boston University)**[129]** *Use-wear Analysis and Obsidian Tool Functions Before and After Teotihuacan*

Obsidian was one of the most important commodities for residents of ancient central Mexico before and after the great city of Teotihuacan. While previous research on stone tools in Mesoamerican archaeology has focused mostly on identifying production sequences, workshop locations, and market exchange, this presentation highlights how different technological forms of obsidian tools were actually used by household residents for specific tasks. A sample of 464 obsidian artifacts from the sites of La Laguna (Terminal Formative Period), the Tlajinga Barrio, Teotihuacan (Classic Period), and Cihuatecpan (Postclassic Period) were analyzed through the methods of high power use-wear analysis. The results indicate change over time in the frequency of non-subsistence related activities associated with blade tools, which peak at Teotihuacan. Different spatial patterns also exist between the excavated compounds at 17:S3E1 and 18:S3E1 within the Tlajinga Barrio. The identification of ritual bloodletting instruments at La Laguna and Teotihuacan is discussed. The results of original use-wear experiments with central Mexican obsidian and materials such as maguey, turkey, wood, bone, and shell are presented and compared directly to archaeological examples. Specific directions will also be provided to help other researchers develop future use-wear studies.

Walz, Jonathan (Rollins College)**[269]** *African Power Plays: Inland Beads, Shells, and Shell Beads in Tanzania, A.D. 700–1350*

This paper grapples with seemingly mundane objects frequently encountered, but largely ignored, in East African archaeology: beads and shells. I report on beads of various materials, shells, and other residues identified during systematic research in hinterland NE Tanzania, A.D. 700–1350. Finds of glass and stone beads with Indian Ocean origins and local beads of landsnail shell alter, in a meaningful manner, archaeological views of oceanic ties to interior East Africa. Material patterning suggests, for instance, that Africans were conscious to shifts in the region's political economy a millennium ago as ties to the Swahili Coast waned. Copious landsnail shell discs produced in the continent's hinterland may have served to help reforge ties with the littoral as the coastal Swahili increasingly oriented themselves to the Indian Ocean. Beads, shells, and shell beads in hinterland Tanzania demonstrate early Indian Ocean ties and African power plays in antiquity. Attention to the socially embedded nature of African objects helps to remake the region's archaeology.

Wanatee-Buffalo, Suzanne (Meskwaki Nation, Iowa, USA)**[266]** *Chair***Wandsnider, LuAnn (University of Nebraska) and Matthew Douglass (University of Nebraska-Lincoln)****[94]** *Human Use of the Sand Hills (Central Plains, North America) during the Peri-Medieval Warm Period: Expectations and Preliminary Observations*

The Sand Hills of northcentral Nebraska (Central Plains, North America) were transgressively devegetated and revegetated during the Medieval Warm Period yet also may have hosted several oases. We rely on Binford's hunter-gatherer frames of reference to model a series of expectations for human occupation here in terms of innovation, resource management systems organization, social network scale and character, and place development as the Medieval Warm Period waxed and waned. Extant archaeological data comment on these models.

Wang, Li-ying**[106]** *The Influence of European Contact in the 17th Century in Taiwan*

This proposed research will discuss the interaction between Europeans and indigenous people in the seventeenth century, which is one of the important topics of historical archaeology in Taiwan, and explore how the indigenous societies responded to the intense culture contact with Europeans. Taiwan was colonized by Europeans in the early seventeenth century and was viewed as a trading base for commerce with Japan and the coastal area of China. In this period, Taiwan had become part of the global trade network in the post-European period, which not only brought the indigenous societies great amount of imported materials, but also influenced the indigenous material culture and societies. European trade network might stimulate the social differentiation if individuals control these imported goods and lead to social complexity. On the contrary, the intense circulation of trade goods might also undermine the monopolization of leaders to accumulate the wealth. By comparing the material culture of indigenous people before and after European contact, we might be able to figure out if there is the transformation of social organization in indigenous societies due to European contact, or Europeans were just another trader traders who under previous established principles of exchange network.

Wang, Xin [173] see Li, Yuqi

Wang, Yanxi (The Field Museum)**[173]** *Landscape Variability and Regional Settlement Pattern of Shang's Periphery: From Regional Full-Coverage Surveys*

The landscape variability was one of the most important factors influencing the regional sociopolitical organizations in the peripheral regions of Shang. In this study, we compared the regional settlement pattern of two regions—one at the broad alluvial plain of the Middle Huai River, which presents a loosely-structured, but still hierarchical regional settlement pattern; and the other at the hilly Guan River Valley, which shows a dramatic retreat of human occupation. By investigating these two settlement patterns, we hope to look into the variability in the sociopolitical organizations at the peripheral regions during the Shang period.

Wang, Qiang and Enrique López-Hurtado (Programa de Investigación Arqueológica, Instituto)**[283]** *The Role of Metals in Ychsma Society: A Case Study of Panquilma*

In this paper, I present a study of the role of metals at Panquilma site during the Ychsma phase (c. A.D. 1000–1470). Although metals were found in all three sectors at Panquilma (ceremonial, residential, and mortuary), the largest collection was from Sector 3, the burial area. Some mummy bundles were found in Sector 2, but they contain far fewer metals compared to the burial area. Similarly, very few metals were found in ritual or ceremonial contexts in Sector 1. It is widely accepted that metals are very important in Andean society. But what metals meant to the people of Panquilma still needs more research. In addition, there is no evidence that metals were produced locally, so the production area for the metals is also an important question that needs to be addressed. In this paper, I explore the role of metal at panquilma and its possible source areas by considering excavated materials from Panquilma

and other contemporary Ychsma phase sites.

Warinner, Christina [62] see Lewis, Cecil

Warinner, Christina (University of Oklahoma), Krithivasan Sankaranarayanan (University of Oklahoma), Thomas Stoellner (Ruhr-Universität Bochum), Frank Ruehli (University of Zurich) and Cecil Lewis (University of Oklahoma)
[223]

An Empty Gut: The Recent Loss of Our Microbial Symbionts

The increasing connectedness of global human populations during the Anthropocene has spread microbial pathogens far and wide. Yet at the same time, the human gut microbiome has simplified, leaving industrialised societies with less complex and diverse microbiota, and increased risk for chronic inflammatory disorders. Among the many taxa that have been lost is the bacterial genus *Treponema*. *Treponema* are present in the gut microbiota of great apes, present day hunter-gatherers in Africa and South America, and many small-scale agricultural societies, but they have been systematically lost in metropolitan North America and Europe. In this paper we present paleogenomic data from well-preserved human coprolites from several ancient global populations. Our findings suggest that the human gut microbiome has undergone dramatic changes over the past two millennia. We argue that sometimes it is the transported beliefs, behaviors, and practices of humans, rather than the direct translocation of species, that ultimately have the most profound and widespread effects on species composition.

Warren, Daniel, Robert Church (C & C Technologies, An Oceaneering International C), Robert Westrick (C & C Technologies, An Oceaneering International C), Melanie Damour (Bureau of Ocean Energy Management) and Leila Hamden (George Mason University)
[39]

Deepwater Shipwrecks and Oil Spill Impacts: A Multidisciplinary Investigation of Shipwreck Impacts from the Deepwater Horizon Oil Spill

The 2010 Deepwater Horizon oil spill in the Gulf of Mexico caused substantial perturbations within the coastal and marine environments. In 2013, the Bureau of Ocean Energy Management and other partners initiated a multidisciplinary study to examine the effects of the spill on deepwater shipwrecks. This poster presents an overview of the ongoing research into the microbial biodiversity and corrosion processes at wooden and metal-hulled shipwrecks within and outside the spill area. This research will provide baseline information for continued monitoring of ecosystems, corrosion processes, and long-term site formation studies of these shipwrecks.

Warren, Daniel [83] see Damour, Melanie

Warren, Amy (University of Missouri, Columbia), Lisa Sattenspiel (University of Missouri, Columbia), Alan C. Swedlund (University of Massachusetts, Amherst) and George J. Gumerman, III (Santa Fe Institute)

[168] *A Family of Five is Not the Same as One Household: The Effects of Disaggregation on Demographic Outcomes in Archaeological Simulation Models*

Many archaeological agent-based computer models (ABMs) use the household as the smallest unit of investigation but, in order to answer questions about how factors such as disease, social interaction, and population movement contributed to population dynamics in prehistory, there is a need for individual-level models. Our team has worked to disaggregate an early archaeological ABM, the Artificial Anasazi model, into an individual-level model, the Artificial Long House Valley model. The baseline version of the latter model has been designed to be as similar as possible to the original model and uses identical environmental data and demographic parameters. A new version of the model maintains the structure of the original, but includes updated environmental and demographic input data.

We compare the results of simulations using the household-level and both individual-level models, and discuss how factors required for disaggregation, such as individual level fertility and mortality, contribute to differing results. Most notably, individual-level simulations generate populations that are significantly smaller than those generated by the household-level model. Through this process, we have learned that disaggregation of a model from the household level to the individual level is not a straightforward process and can result in the emergence of unexpected differences.

Warren, Matthew (University of Texas at San Antonio)

[206] *In-Between Spaces in Far-out Places: Initial Findings on the Practice of Inka Colonialism in the Frontier Region of Pulquina Arriba*

The region of Pulquina Arriba represented a geographically distant and loosely incorporated territory in the final decades of the Inka Empire. Located in the modern department of Santa Cruz, Bolivia, Pulquina Arriba was a relatively small Inka administrative site strategically constructed along a preexisting indigenous road network that ran adjacent to a rich agricultural valley. As such, it was involved in the oversight of local agricultural operations by populations native to the area, and likely played an important role in supporting other Inka colonial activities along this lightly controlled portion of the eastern imperial frontier. This poster will present the results of a regional survey conducted in the vicinity of the Inka site, specifically addressing (1) the settlement pattern determined within the study region and any observed differences in material culture assemblages between sites, (2) the types of activities in which indigenous groups and the Inkas alike were engaged during their occupations of the region, and (3) the extent to which Inka colonial activities seem to have altered preexisting indigenous sociopolitical structures and the implications of these changes.

Wasekov, Gregory (University of South Alabama)

[28] *On the Zooarchaeology of Bears in Southeastern North America*

Ever since Irving Hallowell's classic 1926 study of the special mythic status of bears in the Subarctic, anthropologists are generally aware that many peoples throughout the world have treated bears as something more than a straight forward subsistence resource. Hallowell attributed that special relationship between Subarctic humans and bears to some striking parallels between bear and human behaviors and physiologies. If that were indeed the case, then one would expect to see similar relationships outside the Subarctic, although in fact Hallowell found little evidence for special treatment of bears in southern North America. However, no one has yet surveyed the considerable zooarchaeological, artifactual, ethnohistorical, and ethnographic information on bears in southeastern North America. By taking into account the zooarchaeological evidence of bear hunting in this region, and specifically by employing the human ecological perspective long advocated by Elizabeth Reitz -including such factors as bear demography, reproductive rate, habitat use, seasonal availability, and trophic level- we can reconsider the roles of bears in the various cultures of southeastern Native North America.

Washburn, Eden and Lars Fehren-Schmitz (University of California Santa Cruz)

[276] *Molecular Archaeology In The Central Amazon: Paleogenetic and Isotopic Analyzes of Human Remains from Hatahara*

This study examines early population dynamics and ecology at Hatahara, an approximately 1500-year-old archaeological site in the Brazilian Central Amazon. Due to poor preservation of pre-Columbian human remains, little is known about the genetic make-up and diversity of this region before European contact. In contrast to other regions of South America and especially the Central Andes, this underrepresentation of human paleobiological data inhibits our potential to fully reconstruct Native South American population history and the demographic impact of European colonization. In order to reveal to what extent population dynamic events accounted for cultural development in the Central Amazon, we analyzed ancient mitochondrial and nuclear DNA of 9 individuals originating from Hatahara. This analysis was done by using hybridization capture assays, coupled with Next Generation Sequencing. Additionally, through collagen extracted from permanent molars, stable carbon and nitrogen isotopes were measured in order to reconstruct precise changes in dietary composition, with the goal to potentially shed light on human-environmental interaction and its regulating effect on social organization. Data from this study will provide key information into understanding this region prior to known European contact, and reveal to what extent external stimuli shaped cultural development in the Central Amazon.

Watanabe, Shinya (Nanzan University, Japan)

[102] *Cajamarca during the Middle Horizon: Excavations at El Palacio Site*

In this paper, we present the excavation data from the El Palacio site, a supposed administrative center of the Wari Empire, to consider interaction between the Cajamarca culture and other areas. Kaolin ceramics are an important characteristic of the Cajamarca culture and present a tradition as long as 1,600 years, but at the same time indicate gradual changes during 5 phases. El Palacio site corresponds to the period from the Middle Cajamarca Phase B, C, to the first part of the Late Cajamarca Phase. This site functioned when the Wari Empire had power and was abandoned at the same time as the demise of that empire around A.D. 1000. We found foreign ceramics at the El Palacio site as well as new types of tombs and architecture, which are clear evidence of interaction with other areas. We analyzed the material culture to reconstruct the composition of the people and the range of activities carried out at the site. Finally, we consider the peculiarities of the Cajamarca culture and society.

Waterman, Anna J. [103] see Lillios, Katina

Waters, Gifford [18] see Cobb, Charles

Waters, Michael (Texas A&M University)

[21] *The First Americans South of the Continental Ice Sheets—Correlating the Late Pleistocene Archaeological and Genetic Records*

There is strong empirical evidence showing that North and South America were occupied before Clovis. This comes from sites such as Monte Verde, Chile, Paisley Caves, Oregon, Schaefer and Hebior, Wisconsin, Page-Ladson, Florida, Debra L. Friedkin, Texas, Wally's Beach, Canada, and a few others. This evidence places the initial occupation of the Americas at about 15,000 cal yr B.P. Quality chronological data for Clovis still place this complex between 13,000 and 12,600 cal yr B.P. Genetic studies show that the First Americans hailed from northeast Asia. Genetic studies also show that a single migration occurred into the Americas (south of the ice sheets) from this genetic source population after a brief isolation in Beringia. This migration gave rise to all prehistoric and historic Native groups. This clearly means that there is continuity between pre-Clovis and Clovis sites, with these being the same people with changing technologies. Given the Ice-Free corridor would have been closed until ca. 14,000 cal yr B.P., it seems logical to think that people migrated along the Pacific coast and studies show that this corridor was viable by ca. 16,000 cal yr B.P. Agreement between the genetic models and the empirical archaeological record is emerging.

Watson, Adam (American Museum of Natural History), Jim Enote (A:shiwi A:wam Museum and Heritage Center) and Nell Murphy (American Museum of Natural History)

[30] *Consultation and Beyond: NAGPRA as a Gateway to Collaboration*

With NAGPRA's passage 25 years ago, many saw this federal mandate as an opportunity for museum professionals, scientists, and Native Americans to assess and change the dynamics of their relationships. Few however, likely anticipated the full range of collaborations between Native communities and institutions that emerged from NAGPRA consultations. One such example is the ongoing partnership between the American Museum of Natural History (AMNH) and the A:shiwi A:wam Museum and Heritage Center in Zuni, New Mexico, which began with an NPS NAGPRA Documentation grant in 2010. The ensuing consultations led to a number of positive outcomes including the discovery and Zuni remake of a 1923 ethnographic film of the Zuni Shalako ceremony. These same consultations precipitated the Zuni Map Art exhibition at the AMNH, impacted continuing collections-based museum research, and provided mutually enriching educational and internship opportunities. Finally, the AMNH has joined with other institutions in the development and implementation of the innovative online Amidolanne Database Project. Seven years later, the Zuni-AMNH collaboration endures, strengthened by parallel and at times intersecting projects, each with their own trajectories that ensure the longevity of the partnership for years to come.

Watson, Jessica and Jack Rossen (Ithaca College)

[90] *Tool Manufacture and Bone Breakage Patterns at a Haudenosaunee Site in New York*

The Myers Farm site is located on a hill ten miles east of Cayuga Lake, central New York. It is a small mid-fifteenth century Cayuga farmstead and feasting ground identified by a midden approximately ten meters in diameter. A large roasting pit, hearth features, and storage pits contained animal bone, including worked tools and food debris. This paper describes a preliminary faunal analysis of selected features. Recovered fauna include a generous range of local species, including mammals, birds, fish, and mollusks, and provide a diverse sample of elements suitable for identifying bone breakage patterns. This research focuses first on identifying bone tools, which were vital for efficient food processing and clothing manufacture; second, on patterns of bone breakage as evidence of meat processing and tool manufacture; and third, on worked bone sherds as expedient tools.

Watson, Sara [181] see Peart, Daniel

Watson, Rachel (Louisiana State University)

[238] *An Overview of the Stratigraphy at Witz Naab and Killer Bee, the Remnants of Salt Making Mounds, Paynes Creek National Park, Belize*

Three partially submerged earthen mounds at Witz Naab and Killer Bee are currently the only known remaining above ground evidence of a once-thriving salt industry in Punta Ycacos Lagoon, a large salt-water system in Paynes Creek National Park, Belize. During 2012, field season, excavations were conducted at two of the mounds. This poster will present findings concerning the stratigraphic development of these mounds. Understanding the

stratigraphy of the mounds will aid in interpreting features of the associated submerged salt works. Over one hundred ancient Maya salt works dated to the Classic period (A.D. 300–900) have been submerged by sea-level rise in the lagoon. We have hypothesized that these mounds were once numerous features on the landscape prior to a Terminal Classic/Postclassic sea-level rise. Stratigraphy interpretation will illustrate a potential increase in the scale of production at the Witz Naab site.

[238] Chair

Watts, Christopher (University of Waterloo)

[108] *Being and Becoming in Huron-Wendat Worlds*

Seventeenth century accounts of Huron-Wendat life, like those of myriad other Eastern Woodlands groups, underscore a relational ontology wherein the media which separate humans from non-humans, as well as the organic from the inorganic, is principally porous and naturally given to communion. These same accounts, however, also suggest that the Huron-Wendat possessed an intricate soul schema that, while variegated and capable of metamorphosis, was nonetheless primary and essentialist in nature. In this paper I highlight and think through the complexities of such an ontology, chiefly the inherent tension between the relational and the essential, and assess where and to what extent this might be manifested in Huron-Wendat material culture.

Watts Malouchos, Elizabeth (Indiana University)

[137] *Creating a Cahokian Community: Rethinking Mississippian Storage Practices*

The procurement, processing, preparation and most importantly here, the storage of food, are inextricably tied to the everyday lived experiences of peoples of the past and cannot be disentangled from larger social, economic, and political processes. Storage pits and structures feature prominently in prior studies of Mississippian households but they are mostly regarded as utilitarian and economic spaces rather than integral to communities. Similarly, previous interpretations of Mississippian storage practices have focused on politico-economic functions, connecting the intensification of maize agriculture and control of surplus to the rise of complex hierarchical polities. However, changes in storage practices would have altered the ways communities and identities were physically constructed and how people moved around, interacted with, and related to food, objects, stores, pits, and each other. In this paper, we explore more nuanced entanglements of everyday storage practices and embodied experiences and how they are linked to the physical and relational reconfiguration of communal identities at the onset of the Mississippian period. Utilizing data from the Greater Cahokia region in Illinois, we contend that changes in storage practices during the Mississippian transition were integral to the physical reorganization of communities and the construction of communal identities in a new Cahokian world.

[137] Chair

Watts Malouchos, Elizabeth [137] see Peterson, Staffan

Waudby, Denis (Denis B Waudby)

[63] *Plant Fibre Diagnostics: Retrospect and Prospect*

Here I review ethnographic studies of hunter-gatherer groups from North America, Siberia, and Scandinavia to examine plant-fibre material cultural heritage and natural husbandry practiced by these societies. This study considers plant-fibre textiles and their diagnostic differential typology to aid understanding of plant fibre processing and utilization and attendant diagnostic features. The poor preservation of European plant-fibre directs diagnostic trials to modern reference material and inferential diagnosis from museum collections of textile tools and their tool wear. The intension is to share the diagnostic potential for FT Raman-Spectroscopy, fibrillar rotational-velocity, and phytolith production as robust, non-destructive and minimally invasive techniques to aid the interpretation of ethnographic and archaeological textiles produced prior to the eighteenth century introduction of flax. Our current reconstructive work concerns the use of nettle fibre as a bowstring material in European medieval archery.

Weaver, Eric [130] see Smyth, Michael

Weber, Sadie (Harvard University)

[19] *Bread (Nut) Pit? Determining the Function of San Bartolo Chultúns*

San Bartolo, located in the Petén of Guatemala, boasts the earliest examples of Maya murals and writing known to date in Mesoamerica. Despite the extensive work in the monumental sector of the site, comparatively less work has been carried out on the domestic sectors. Like many Maya sites, chultúns are a common though enigmatic feature. High quantities of charcoal and household refuse recovered during the chultún excavations, including ground stone, animal bones, worked bone, and wood charcoal suggest that the chultúns were used as middens for refuse, rather than for food storage or fermentation, but it is indeed possible that they had multiple functions throughout their use lives. While previous studies—both experimental and archaeological—have proposed various, multi-faceted functions of ancient chultúns, each context is different. Here, we present the results of microbotanical analysis carried out on ashy deposits of two chultún middens located inside collapsed house mounds from San Bartolo to better understand the use-life of chultúns. We also present the results of experimental attempts to replicate the taphonomic processes affecting micro-botanical preservation in these environments.

[19] Chair

Weber, Steve [19] see Hanson, Sydney

Weber, Andrzej

[52] *Spatio-Temporal Variation in Mortuary 'Skull Cults' among Middle Holocene Hunter-Gatherers of the Baikal Region, Siberia.*

Middle Holocene hunter-gatherers of the Cis-Baikal region in Siberia (~7500–3700 cal B.P.) are known for their rich mortuary record. The evidence provided by about 1,300 individual burials documented from roughly 150 cemeteries of various size, contains frequent references to the heads of the deceased allocated special mortuary treatment. These 'skull cults' include peri-mortem decapitation, post-mortem head or skull removal from the grave or a treatment with fire or red ochre. While much has been written about such mortuary 'skull cults' in the Baikal region, either in Russian or international

publications, systematic account of this matter is still lacking. The current paper is the first step in the direction to fill in this lacuna of knowledge with some quantitative data assembled in the database developed by the authors. More specifically, the focus of this survey is on spatio-temporal variation with regard to mortuary 'skull cults' among the Neolithic and Early Bronze Age groups in Cis-Baikal.

[52] *Chair*

Weber, Jennifer (University of Bonn)

[234] *Transects, Trowels, and Technology: Recreating the Ancient Landscape at Pacbitun, Belize*

The ancient Maya site of Pacbitun, Belize was first systematically recorded in the 1980s. Since then, archaeologists have continuously worked on recreating the site's ancient landscape. In addition to traditional survey methods, the Pacbitun Regional Archaeological Project (PRAP) has implemented non-invasive survey tools like terrestrial laser scanning (TLS) and, more recently, the analysis of aerial LiDAR (light detection and ranging) data. In this poster we present a comparative analysis of traditional survey and excavation techniques, terrestrial laser scanning, and aerial laser scanning, implemented at Pacbitun. The aim is to explore how traditional and modern survey tools can complement each other in a fixed area that has undergone over three decades of archaeological research.

[158] *Discussant*

Webster, Chris (DIGTECHrm - DIGTECHmedia - Archaeology Podcast Network) and Tristan Boyle (DIGTECHmedia - Archaeology Podcast Network)

[35] *Podcasting as a Way to Promote Archaeology and Engage the Public, or, Archaeology—Straight from the Trenches to your Ears!*

Podcasts have been around for over 10 years now and only in the last couple years, since the release of the popular This American Life spin-off, Serial, has the American public been interested. Until Serial, it seemed that you were either a podcast listener or you weren't. Now, people are incorporating them into their lives as trusted sources of information and entertainment. The Archaeology Podcast Network was founded as the first season of Serial came to a close and our downloads quickly hit 7,000 a month. Podcasts on the APN range from niche shows about specific topics related to professional archaeologists to popular shows that can reach a wider audience. Every show, however, is free and accessible to anyone on the planet. It's clear that podcasting is a great way to engage the public and that more archaeological endeavours, from projects to field schools to contract projects, can use podcasting to present data, inform and educate the public, and start conversations.

Webster, Laurie (University of Arizona)

[63] *Forgotten but Not Gone: Restoring the Research Potential of Older Perishable Artifact Collections from Southeastern Utah*

During the 1890s, more than 4,000 well-preserved textiles, baskets, wooden implements, hide and feather artifacts, and other organic materials were excavated by local "cowboy" archaeologists from Basketmaker and Pueblo-period archaeological sites in the greater Cedar Mesa area of southeastern Utah. Most of these artifacts were shipped to museums outside of the Southwest, where they were largely forgotten by archaeologists and the public. In 2010, the Cedar Mesa Perishables Project was born to "re-excavate" and interpret these remarkable collections and make them more accessible to researchers, the general public, and native communities. Our work with these 700 to 2,000-year-old collections has revealed a wide range of fiber, wood, horn, and feather artifacts related to textile and basketry production, woodworking, hideworking, animal and bird procurement, farming, personal adornment, and other socioeconomic practices. In this presentation, I discuss some of what we have learned about the uses and manufacture of these perishable technologies, how our work has broadened our understanding of Basketmaker and ancestral Puebloan societies, and our efforts to create a perishable digital archive to make these collections more relevant for research and accessible for interpretation and study.

[63] *Chair*

Wedding, Jeffrey [63] see Hamilton-Brehm, Scott

Wedenoja, William [66] see Worman, F. Scott

Weeks, William (Tennessee State Museum) and Edward Jolie (Mercyhurst University)

[63] *Discovering Plies in Back and Then, Just About Everywhere: Perishable Artifact Studies from the Eastern U.S. Beginning with Tennessee*

The Tennessee State Museum has several collections of perishable artifacts from dry rock shelters and caves on the Cumberland Plateau containing varieties of cordage, basketry, textiles, footwear, worked hide, wood, feathers, and other items that appear to date between the Archaic and Mississippian periods. Preliminary analyses explore the origin, distribution, and fusion of styles that became the enduring traditions of the indigenous peoples of the American southeast. Ethnographic and archaeological comparative data complement new insights from museum vaults replete with many things seemingly forgotten.

Wei, Qiaowei, Feng Shi (Zichuan Museum) and Yichao Zhao (Shandong Institute of Archaeology and Cultural Rel)

[10] *State Archaeology and Private Museum: An Integrated Approach to Represent Heritage Values for Local People*

The legislative system of cultural heritage in China outlined cultural heritage management and archaeological activities fulfilled under exclusive right of state. This state archaeology proves its worth to increase the authority and quality of cultural heritage management, as well as to enhance the heritage values at the state level. The local communities, however, hardly embedded into the activities of cultural heritage management and archaeological projects, nor meet cultural heritage concerns of local people themselves. This paper considers that private museum as concerns of regional heritage values and benefits in the projects of state archaeology. With a case study of collaborations between archaeologists and local agents under the excavation and conservation of ancient kiln sites at Zibo, I argued that the private museums could be the relatively prominent platforms for public engagement in activities of state archaeology. It remains the further discussion, however, that lack of means to enhance the power of local communities to run the heritage management as the ethnical responsibilities of local people.

Weinberg, Camille (University of Texas at Austin), Nicole Paynter (University of Texas at Austin) and R. Alan Covey (University of Texas at Austin)

[198] *Ecological Variation and Trajectories of Village Settlement in Formative Cusco*

Regional surveys to the north and west of Cusco demonstrate that the earliest villages (c. 1000 B.C.–A.D. 300) are found across a wide elevation range, and in varying contexts of local ecological diversity. This paper considers the role that local resource variation and subsistence practices might have played in the long-term stability of these early communities. Using data from 131 Formative Period sites registered across a 1,200 square kilometer study region, we evaluate the surrounding settlement patterns and environmental diversity for the region's 10 largest Formative sites. We then compare local landscape differences with long-term occupational trajectories of these large villages. Local ecological variations associated with Formative villages suggest diverse social and economic practices at the community and regional levels, and we consider different models for the development of village life in this part of the Andean highlands.

Weinelt, Mara (Kiel University), Christian Schwab (Institute of Pre- and Protohistorical Archaeology,), Jutta Kneisel (Institute of Pre- and Protohistorical Archaeology,) and Martin Hinz (Institute of Pre- and Protohistorical Archaeology,)

[95] *Climate Change and Societal Change in the Western Mediterranean Area 4.2 ka BP*

In the eastern Mediterranean area, coherent patterns and synchronous events around 4.2 kaBP suggest an obvious link between cultural upheaval in urban societies and climate forcing. Here, the 4.2 kaBP aridification event is thought the cause of severe economic consequences and social unrest. The picture for the central and western Mediterranean regions, at the interface of North Atlantic (Bond event 3) and monsoon-influenced climate, is different. It remains unclear whether supra-regional drought around 4.2 ka BP extended into the western Mediterranean. Yet contemporaneous pre-urban societies, already marked by emerging complexity, were in profound upheaval during their transition from Late Neolithic to Early Bronze Age ideologies. An array of abrupt cultural transitions, precisely dating to 4.2 kaBP, include widespread "crises" of Mediterranean Bell Beaker populations, the transitions from Pre-palace to Palace cultures on the Greek Islands, the transition from Los Millares Culture to El Argar Culture in the south-eastern Iberian Peninsula. The possibility that these transitions may have been responses/resilience strategies to abrupt climate change has so far hardly been considered. Here we trace patterns of socio-environmental crisis using pertinent proxy records of seasonality, population density, subsistence, and settlement patterns from existing and new archaeological and climate archives.

Weinstein, Karen (Dickinson College)

[62] *Morphological Signatures of High-Altitude Adaptations in the Andean Archaeological Record and the Challenges of Distinguishing Developmental Plasticity from Genetic Adaptations*

High-altitude hypoxia, cold ambient temperatures, and malnutrition are critical environmental stressors affecting living human populations in the highland Andes. Decades of scholarship in human biology explain the complex physiological responses that provide adaptive fitness to living human groups at high altitudes through both developmental acclimatization, in which the human body adjusts to environmental stress during growth, and genetic adaptations from natural selection. Given the longevity of human settlement in the highland Andes, these same biological responses ought to have affected ancient Andean groups. This paper uses the biology of living humans from the highland Andes as a model to explore the morphological signatures of biological adaptations to high-altitude environments in ancient human skeletons from different elevations in the Andes: two groups from coastal regions, one group from moderate elevations in the Atacama Desert, and one group from high elevations in the southern Peruvian highlands. This examination focuses on distinguishing developmental plasticity due to acclimatization that can develop in a single generation from genetic adaptations that arise through natural selection. Gene flow, natural selection, and developmental plasticity each factors into the emergence of the biology of ancient populations at high altitudes in the Andean archaeological record.

Weisman, Russell

[175] *Marking Time and Place—Eclipse Representations in the Late Prehistoric Rock Art of the Central Mississippi River Valley*

Total solar eclipses are perhaps the most dramatic of celestial events. During a total eclipse, for a few moments, while the moon passes unseen between the earth and the sun, viewers positioned directly in line with the sun and moon experience totality. The sun goes black. Day turns suddenly to dusk, winds stir and animals assume their night time behaviors. It is then and only then that the sun's luminous and variable corona becomes visible.

Solar eclipse representations have been widely identified in ancient rock art. Eclipses differ from other transient astronomical events because the date and place of their past occurrence can be calculated for every site, making it possible to consider relationships between putative eclipse representations and dated events.

The spatial patterning of late prehistoric rock art motifs in Missouri and Illinois that may be eclipse related are reviewed in relation to the central paths of particular eclipses visible from those sites. Sites that experienced totality during two rare 'black sunrise' eclipses in the years 831 and 941 are highlighted. Eclipses may have prompted the creation of representational rock art as visual markers denoting places within the landscape that were sanctified by contact with the celestial shadow.

Weismantel, Mary (Northwestern University)

[105] *Ontologies of Water on Peru's North Coast*

The power of water is all-important in the long history of Peru's North Coast: the arid environment, the transformative effects of irrigation, and the devastating force of the ENSO (El Niño) ecological phenomenon. Archaeological theorizing about North Coast societies has often focused on the shaping force of water; this paper suggests bringing emergent thinking about the human/nonhuman relationship to bear on this topic. Twentieth century Western science saw water as something to control through the rational application of technology, and anthropologists often interpreted non-western water rituals as attempts by pre-scientific people to achieve this technological control. In the Andes, for example, human sacrifice has been interpreted as an effort to convince the gods to bring rain or avert floods. But new evidence points to alternative models, in which co-habitation rather than absolute control is the desired end. These include: theoretical critiques of the universality of the nature/culture divide; environmentalist critiques of the failure of engineers to control water in New Orleans and elsewhere; comparative data on water management by other non-Western societies; and Andean cultural evidence from the Huarochiri manuscript and North Coast ceramics.

Weitzel, Celeste [139] see Flegenheimer, Nora

Welch, Morgan, Patrick Mullins (University of Pittsburgh) and Brian Billman (University of North Carolina at Chapel Hill)

[205] *Overtaking the Past: Addressing Modern Site Destruction in the Moche Valley*

Through increased study of the rural hinterlands surrounding the Chimu capital at Chan Chan, a broader understanding of state structured domestic and

administrative sites--so as to control labor, land, and water--has emerged. Located in the Moche Valley of Peru, the Chimú sites of Cerro la Virgen and Milagro de San Jose have the potential to provide valuable data related to urban-rural relationships, but run the risk of being destroyed by modern human activity.

Using previous research and more recent data collected as part of MOCHE Inc., the authors illustrate the archaeological potential of these sites, demonstrate the extent of modern urban and rural destruction at both sites, and outline immediate and future avenues for site protection and preservation. To continue studying prehistory in this region, it's necessary to gain a better understanding of the motivations driving modern urban-rural expansion as well as specific community relationships to nearby archaeological sites. The economic value of the land occupied by these sites, not the economic incentive behind looting, is seen as posing the greatest threat. In conclusion, suggestions for both short-term and long-term approaches to site preservation are provided, focusing on collaborative efforts between local communities and archaeologists.

Welker, Martin (Penn State University), Jonathan Burns (Juniata College), Jennifer Haney (Penn State University) and Sarah McClure (Penn State University)

[176] *A Database Approach to Historic Military Provisioning*

Planned military provisioning recorded in historic documents likely decreased variability in soldiers' diets and resulted in widespread use of domestic livestock. However, faunal remains from Fort Shirley, a French and Indian War fortification in Western Pennsylvania, indicate a heavy reliance on wild resources, particularly deer. Comparisons with other fortifications examined archaeologically reveals a breadth of functional and dietary differences between sites. First, the term "fort" describes a variety of military installations, ranging from defensive works manned by professional soldiers to supply depots, fur trade posts, and even fortified homesteads. This complicates archaeological examination of soldiers' diets and the role of historic military provisioning. Using a database of faunal data from historic fortifications in the eastern U.S. and Canada (1754–1870), we examine species diversity, homogeneity, evenness, and reliance on domesticates to address questions including the accessibility of standardized provisions among professional soldiers and militia; the influence of provisioning on local ecological diversity; and changes in military provisioning through time.

Weller, Errin (University of Colorado - Boulder)

[53] *Volcanos, Imagery, and Footpaths: Research in Costa Rica*

Over multiple field seasons, Dr. Payson Sheets has led the Proyecto Prehistorico Arenal in the Northwest corner of Costa Rica. A landscape characterized by repeated volcanic eruptions has resulted in the preservation of prehistoric footpaths. Dr. Sheets established a methodology combining satellite imagery and archaeology that could differentiate between erosional, historic, and prehistoric footpath features. This paper will focus on this methodology and Dr. Sheets' contribution to remote sensing methodology. I will focus on the two seasons I joined Dr. Sheets in 2002 and 2003. To summarize, the ash layers provide footpath chronology, the stratigraphic profiles reveal a characteristic broad U-shape resulting from use, and the location of the anomaly on a high ridge or in association with cultural features provide evidence of a prehistoric footpath. The successful location of footpaths contributes significantly to an archaeological understanding of how humans were moving across the landscape and the reasons for doing so.

[32] *Chair*

Wells, Joshua (Indiana University South Bend)

[261] *DINAA Means "Everybody Can Be a Digital Curator": Community-Powered Disciplinary Curatorial Behaviors with the Digital Index of North American Archaeology (DINAA)*

The Digital Index of North American Archaeology (DINAA) has a massive compilation of archaeological site data. This paper presents recent findings from development of DINAA's site database, efforts to link DINAA with mined references from digital literature, and efforts to prepare DINAA for future crowd-sourced professional data citations. The continental United States spans eight million square kilometers, with a multicultural past of over 15,000 years. Archaeologists have been practically and theoretically frustrated in search of curatorial practices, digital or otherwise, to make comprehensible the reporting and interpretation of such a vast spatiotemporal set. The federal organization of State and Tribal Historic Preservation Offices and similar entities under the National Historic Preservation Act guarantees local systems of information management will maintain records of archaeological sites within territorial jurisdictions. DINAA has successfully interoperated and made completely public the non-sensitive, scientific information from many of these systems. Linkage of these data with other datasets at large scales, crosscutting political borders, facilitates archaeological and interdisciplinary studies of human adaptation. In cultivating an open source community, DINAA hopes to add value to site and collections data (digital and otherwise), make these accessible to researchers and stakeholders, and highlight ethical approaches toward distributed data curation.

[4] *Discussant*

Wells, E. Christian (University of South Florida)

[100] *The Landscape Legacies of Plantation Agriculture in the Caribbean: An Historical-Ecological Perspective from Betty's Hope, Antigua*

This paper examines physical, chemical, and biological properties of soils and sediments from landforms in eastern Antigua, West Indies, to better understand the long-term consequences of plantation agriculture. Plantation farming played a central role in the history of Caribbean societies, economies, and environments since the seventeenth century. In Antigua, the entire island was variably dedicated to agricultural pursuits, including sugarcane and cotton, from the mid-1600s until independence from Great Britain in 1981 when most commercial cultivation ceased. Today's soils are highly degraded, although it is unknown what the role of the island's plantation legacy has played in this process. Our research combines geoarchaeological survey and sampling, sediment core analysis, and historical archival research to model the initial and cumulative impacts of the plantation industry on the island, focusing on the region surrounding Betty's Hope, a sugarcane plantation in operation from 1674–1944. We find that current erosion and degradation issues experienced by today's farmers are not attributable to intensive plantation farming alone, but rather are part of a complex mosaic of human-environmental interactions that included abandonment of anthropogenic landscapes.

[100] *Discussant*

[100] *Chair*

Wells, E. Christian [120] see Tricarico, Anthony

Wells, Peter (University of Minnesota)

[248] *Discussant*

Wen, Zeng, Yongsheng Zhao (Shandong University), Hong Zhu (Jilin University) and Jiawei Li (Jilin University)**[180]** *Genetic Structure of Ancient Population of the Early Bronze Age Qijia Culture and Genetic Contribution Present-Day Chinese*

The Qijia culture was an early Bronze Age culture distributed around the upper Yellow River region of Gansu (centered in Lanzhou) and eastern Qinghai, China. It is regarded as one of the earliest bronze cultures. The Mogou site was a massive site of Qijia Culture in the Ganging region, more than one thousand graves have been found there. In our research, we studied the genetic structure of early ancient Mogou population, and further explored the genetic relationship between them and present-day Chinese people. We successfully analyzed and repeated 55 of 60 samples from Mogou site. Their mitochondrial DNA haplotypes were assigned to 14 haplogroups: A, B, C, D (D*, D4, D5), F, G, M7, M8, M10, M13, M25, and N*, N9a, Z. Y-SNP analysis revealed that six individuals which were successfully identified by molecular biology all belonged to haplogroup O3a3. We found that the ancient Mogou population living in Ganqing region have significant genetic contributions to present-day Tibeto-Burman populations and North Han Chinese population.

Wendrich, Willeke (UCLA)**[177]** *Rescue Excavations at Mai Adrasha (Ethiopia)*

The combination of gold and archaeology is never a good one. The site of Mai Adrasha is under imminent threat of total destruction because of large scale panning of natural gold traces by the local population living near to the largest Axumite site West of Axum. In December 2015, a team from UCLA started a community project to work with the local population in safeguarding and excavating this important site. The research focus of the work is to establish the lay-out, development and function of the site and employ the stratification to develop a well-dated ceramic sequence which will inform a broad survey in the same area.

[33] *Discussant***Wenke, Robert****[60]** *The Early Egyptian State*

Of all the ancient states, the concept of heterarchy would seem to be least applicable to ancient Egypt. There, according to traditional interpretations, successive polities in the 3rd Millennium BC successfully monopolized power and authority by means of increasingly elaborate and hierarchically-arranged administrative structures and functions. But recent analyses and evidence suggest that state did not maintain absolute control at all times and in all areas of the state, particularly with regard to Nile Delta occupations. The state's extension of political control and economic exploitation to Delta provinces required innovative and varied administrative methods, some of which perhaps involved heterarchical relationships.

Wenzel, Jason (University of Florida)**[287]** *Staging Consumption: The Archaeology of Florida Tourism*

This presentation will provide a review of current archaeological studies of historic resort and hotel sites in Florida. I will discuss insights yielded from these studies that informs on commodities acquisitions, consumption, and social status through the framework of anthropological and sociological perspectives of leisure and tourism. The major research goal of this project is to ascertain the cultural, sociological, and economic forces that have shaped Florida tourism through time by investigating how the state's early resorts staged socially mediated atmospheres for consumption in the context of accessibility to environmental and market resources.

Wenzel, Jason [7] see Harding, Gregg

Werby, Nadia [267] see Smith, Lindsey

Wernecke, D Clark (The Gault School of Archaeological Research)**[253]** *Jerry Sent Me to Mesoamerica and All I Got Was a Shirt...*

I was a returning (older) student, a market segment many universities have trouble relating to, fortunate to arrive at Florida Atlantic University with a number of other returning students. Dr. Kennedy let us run with our ideas, working CRM jobs, starting a lab on campus, and exploring our interests. Then one day, he comes to me and says, "I know this person who might need your skills" and I was off to Belize and Guatemala on the start of what has been both a great adventure and a rewarding career. I started in Archaeological Project Management and found myself involved in public archaeology, ecotourism, and international diplomacy—and the adventure continues.

Werner, William (Syracuse University)**[258]** *"The Real and Only True Documents": German Naturalists and the Systematic Observation of Antiquities in Mid-Nineteenth-Century Central Veracruz, Mexico*

This paper examines a small network of amateur naturalists who were among the first to document archaeological remains in central Veracruz, Mexico. Carl Christian Sartorius (1796–1872), Karl Hermann Berendt (1817–1878), and Hugo Finck (ca. 1824–1895) shared backgrounds as German expatriates living and working as professional farmers and physicians in Veracruz. Their detailed knowledge of the peoples and landscapes of Veracruz, as well as their frequent trips to the field, enabled their documentation of archaeological remains in the rural municipalities in which they worked. Their methods and discussions reflect common themes in the early disciplinary literature, including a focus on material remains as historical sources; the synthesis of multiple sources of information (artifacts, built structures, stratigraphy, and landscapes); the production of accurate maps and sketches; and synthesis of field observations with the archaeological literature produced elsewhere in Mexico and globally. This paper focuses on the transfer of knowledge between these fieldworkers and their museum-based professional counterparts through correspondence, collections, and essays, and concludes with a consideration of how the professionalization of archaeology in the late nineteenth century impacted their scientific legacies.

Werness-Rude, Maline [27] see Spencer, Kaylee

Wernke, Steven (Vanderbilt University) and Teddy Abel Traslaviña (Universidad Nacional Mayor de San Marcos)**[174]** *A GIS of Movement and Sensory Experience at a Planned Colonial Town in Highland Peru*

GIS in archaeology has diversified beyond its origins as a map-and-database and predictive modeling tool to explore multidimensional views of human experience in the past. This paper combines models of movement and visibility at the scale of a single settlement to render an approximation of sensory experience within the built environment of a planned colonial town in highland Peru. In the 1570s, some 1.5 million native Andeans were forcibly resettled to "reduction towns" (reducciones) based on a theory of the built environment: that compact settlements built around central churches and plazas would generate properly civilized, Christian subjects and communities. The relict reducción of Santa Cruz de Tuti of highland Peru is exceptional in its architectural preservation, enabling modeling of visual and kinetic aspects of dwelling in one of these towns. Specifically, traffic density maps derived from spatial network analyses are used to distribute observers in a high resolution, site-level cumulative viewshed analysis, thus integrating a model of aggregate movement with visibility density estimates. The results point to the centrality and visual prominence not only of the site's church and plaza, but of indigenous elite households and the Inkaic ritual spaces that were incorporated within the core of the reducción.

Wernke, Steve [205] see Smith, Ryan

Wesson, Cameron [4] see Ervin, Kelly

Wesson, Cameron (Lehigh University)**[137]** *From Households to Communities and Back Again: Bridging Analytical Scales in Search of Conflict, Coalescence, and Communitas*

Archaeological examinations of households and communities have increased dramatically over the past decade. These studies explore the ways people define themselves while simultaneously shaping the social interactions, physical spaces, and material objects that comprise their daily existence. Despite the considerable insights generated by such studies, it is often difficult to bridge analytical scales when research is primarily focused at either the household or community level, with little to integrate these scales of investigation. We must acknowledge that communities are neither merely the byproducts of actions undertaken by individual households, nor are households simply passive reflections of the communities of which they are a part. This paper examines the difficulties we face when bridging these scales of analysis in the Mississippian Southeast, suggesting that we require new theoretical perspectives to more adequately understand the relationships between households and communities.

West, Frankie (The University of Tennessee, Knoxville), Brannon Hulsey (The University of Tennessee, Knoxville) and Graciela Cabana (The University of Tennessee, Knoxville)**[111]** *Confirmation of Mitochondrial Haplotype C4c in Samples from Norris Farms #36, Illinois*

The Norris Farms #36 site in northern Illinois (ca. A.D. 1300) has been widely featured in archaeological investigations, including foundational ancient DNA analyses. We built on these studies, analyzing mitochondrial DNA hypervariable regions I and II from 98 individuals. The Norris Farms #36 site demonstrates high levels of mitochondrial diversity, with all five major founding lineages present. Included in this diversity are individuals belonging to mitochondrial haplogroup C who demonstrate the absence of the np 16325 deletion, characteristic of rare mitochondrial haplotype C4c. Confirmation of this haplotype requires the presence of multiple mutations throughout the mitochondrial genome. Using whole mitochondrial genome typing and traditional Sanger sequencing we confirmed that several of these individuals belong to haplotype C4c. This is significant, as currently there are less than 20 individuals in the Americas that have been identified as haplotype C4c, most of which have been obtained from modern samples. Here we analyze our data along with existing data and geographic distributions of C4c individuals within North and South America to better understand early migration patterns.

West, Catherine [296] see Fitzhugh, Ben

Westby, Molly [267] see Kralick, Kolleen

Westrick, Robert [39] see Warren, Daniel

Weyrich, Laura (University of Adelaide), Keith Dobney (University of Aberdeen) and Alan Cooper (University of Adelaide)**[160]** *Insights from Neandertal Dental Calculus: Tracking Pacific Colonization Events using Ancient Bacteria*

Interpreting the evolutionary history of bacterial communities within the human body (microbiota) is key to understanding multiple aspects of disease transmission and human health. This tight association between humans and their microorganisms can also be exploited to track past human interactions, providing information on past human movements and their introductions to new locations or environments. Using a shotgun sequencing approach on ancient DNA from the dental calculus in Neandertals, ancient Europeans and Africans, and greater apes, we have shown that specific oral and respiratory bacterial and viral pathogens can be examined and disease origins can be determined using this method. By examining ancient and historic bacterial DNA from dental calculus (calcified dental plaque) of Pacific Islanders, we can now explore past human movements by tracking bacterial lineages in the mouth, and examine how pathogens and commensal microorganisms were impacted by changes in diet and environment. Consequently, dental calculus present on archaeological specimens from Pacific Islanders provides a wealth of cultural and anthropological information about the past, which is critical to identify the timing and impacts of cultural and environmental events that altered human health and history.

Whalen, Kathryn (University at Buffalo)**[147]** *The Home Network: X-ray Florescence and Geochemical Data of Post-Medieval Ceramics in Ulster*

The area known as Ulster is one region where complex colonial and ethnic relationships are evident in the past, as well as in the present. This study looks specifically at the trade of ceramics in Post-Medieval Ulster, to see if coarse earthenware ceramics are being imported from elsewhere along with English refined earthenwares or if they are being produced locally in Ireland. Through the use of portable X-ray florescence (pXRF), the multi-elemental makeup of 1342 sherds will be examined to determine their point of origin by comparing it to the Tellus geochemical data collected by the Geological Survey of Northern Ireland. These sherds represent 22 farmsteads across Counties Armagh and Tyrone, and a range of ethnic groups and classes.

This poster reports on the pXRF data analyzed for The Home Network project and its relationship to the Tellus open source geochemical data set. The statistical methods used to compare the two data sets for similarities will be presented, and the results of this comparison, which would suggest the point of origin for the ceramics in question, will be interpreted. The efficacy of pXRF and the statistical methods will be addressed with an eye to replicating this study in other regions.

Wheeler, Derek [36] see Ptacek, Crystal

Wheeler, Ryan (Robert S. Peabody Museum of Archaeology)

[253]

Wm. Jerald Kennedy's Legacy of Archaeology in Palm Beach County, Florida

In the spring of 1989, Jerry Kennedy hired me to conduct fieldwork for the first archaeological reconnaissance survey of Palm Beach County. I drove around the county in Florida Atlantic University's late 1980s model Ford Taurus wagon with a list from the Florida Master Site File, attempting to revisit as many sites as possible. The station wagon endured a fair bit of off road driving, including an excursion into the South Florida Water Management District's newly establish DuPuis Environmental Area and the neighboring J.W. Corbett Wildlife Management Area. These public lands preserved sites along the Loxahatchee Scarp—an upland area rimming the northern edge of the Everglades. Later, as an archaeologist with the State of Florida, I was able to conduct a small study of one of these sites—the so-called Whitebelt Circle Ditch. Characterized by a large, circular ditch, the site resembles the Great Circle of Fort Center and other little-studied circle-ditch sites around Lake Okeechobee. This paper summarizes that research and the regional context of circle-ditch sites. Despite having to rescue me after the FAU wagon finally gave up the ghost, Jerry continued to be a wonderful mentor and friend, and for that I am truly grateful.

[253]

Chair

Whisenhunt, Mary [168] see Hard, Robert

Whitaker, Adrian (Far Western Anthropological Research Group, Inc.) and Christina Giovias (University of Queensland)

[296]

When to Hunt a Sea Lion, When to Hunt a Manatee: The Evolutionary Ecology of Marine Mammal Hunting in Insular Settings

A notable feature of hunter-gatherer adaptations in mainland coastal settings throughout the world, is the ubiquity of marine mammal hunting. This pattern is less commonly seen in insular settings, which is surprising since marine mammals are often the only large mammal available. We develop a model based in evolutionary ecology that predicts ecological, social, and technological conditions that shape the choice to hunt marine mammals. We then evaluate this model in light of data from the island Caribbean and the Santa Barbara Channel Islands off the coast of California.

The Channel Island record demonstrates persistent hunting of marine mammals though the species hunted change through time from dolphins and porpoises to sea lions. In contrast, there is little evidence for the hunting of manatees, monk seals, and other marine mammals in the Caribbean. Possible explanations that we explore include constraints of boating and hunting technology, transport costs, the effects of preservation and resource base on the attractiveness of marine mammals as a resource, and the proximity to and connection with continental coastlines.

White, Charles (Boston University)

[11]

Schools and Public Archaeology: Igniting a Commitment to Heritage Preservation

Schools are a natural and potentially fruitful venue for public archaeology efforts; natural, because cultural transmission is a fundamental purpose of schooling, and potentially fruitful, given the nearly 50 million students currently enrolled in K-12 schools (National Center for Education Statistics, 2015). Schools are also a target audience of enormous importance to public archaeology, largely because the goals of heritage preservation depend on the formation of durable habits of mind and commitments that begin developing in youth. Of course, after entering the school-house door, appreciation for archaeology and the preservation of heritage sites must compete in a congested arena of interests. Acknowledging the challenges, this paper focuses on the opportunities for public archaeology in pre-college education (linkages to content standards, inquiry/problem solving, and service learning) and in teacher preparation (teaching methods and materials).

White, Devin (Oak Ridge National Laboratory) and Scott Ortman (University of Colorado Boulder)

[17]

Travel Corridors and Economic Integration in the Chacoan Regional System

It is well known that a variety of goods flowed into the center of the Chaco regional system between 980–1140 C.E. Previous research demonstrated that these goods were generally consumed within the canyon instead of redistributed to outlying settlements. Yet, a variety of indicators from peripheral areas indicate robust economic expansion during this same period and contraction in the immediate post-Chacoan period (1140–1180 C.E.). This suggests greater levels of exchange and interaction among outlying settlements during the Chacoan era than previously noted. We employ a novel geocomputational method for determining routes of pedestrian travel to test the extent to which the spatial distribution of outlying great houses was optimized for pilgrimage to the center in Chaco Canyon vs. inter-outlier exchange. We also test the competing hypothesis that great houses were located with respect to water sources as opposed to travel corridors. Results indicate that the model of inter-outlier exchange provides the best fit with available data. These results suggest regional political integration facilitated economic development throughout the Chacoan regional system, and that this system developed as an undirected network more so than one focused on Chaco. We suggest similar approaches may be useful for the study of other regional systems.

White, Samuel (PhD Program, Anthropology Department, The University of Montana)

[62]

The Anzick Site: A Rocky Mountain Locale Featuring Recurrent Human Utilization across the Millennia

The Anzick Site is a multi-component archaeological site located at approximately 5,000 ft above sea level in the Shields River Valley of south central Montana. Included in the archaeological discoveries at the site are the fragmentary human remains of two individuals as well as an assemblage of approximately 115 lithic and osseous tools diagnostic of Clovis Culture technology. This assemblage of tools was thickly covered with red ochre, as was one set of remains, presumably indicating a burial from which osseous tool samples were dated to approximately 11,000 radio carbon years before present (rcybp) with the remains dating to approximately 10,780 rcybp. The other set of remains, discovered 30 feet distant and uphill from the ochre-covered remains dates to approximately 8,600 rcybp and are thought to be from a separate interment. Representing a continual human presence in the Rocky Mountains of Montana, there is still much to learn from The Anzick Site. In this paper, I consider scientific and theoretical techniques by which we may

elucidate the meaning of this site, utilizing in-depth analysis of the artifact assemblage attributes along with further logical reflection on tangible facts since its accidental discovery in 1968.

Whitley, Tamara (Bureau of Land Management)

[114] *Predicting the Past: GIS Modeling on the Carrizo Plain National Monument*

The Carrizo Plain National Monument contains some of the most significant heritage resources in North America. This includes the 100 Native American habitation and pictograph sites within the Carrizo Plain Archaeological District National Historic Landmark. Appropriate management is critical to the preservation of these sensitive resources. The results of GIS modeling can be directly applied toward a wide variety of historic preservation approaches. This presentation will describe the development of a site location predictive model for the CPNM and its direct application to resource management.

Whitley, David (ASM Affiliates, Inc.)

[131] *The Archaeology of Dreams and What It Tells Us About Climate Change*

Why does archaeology matter in the twenty-first century? One value is its ability to help us understand how humans react to changing circumstances, not with law-like statements but instead in terms of general behavioral patterns. The social context south-central California rock art, a record of visions or dreams, is an example of this fact. As partly indicated by rock art, the Medieval climatic anomaly led in one area to a population collapse but, in a related region, to population increase and the emergence of hierarchical leadership. This demonstrates that even potentially devastating climate change results in winners and losers. And this raises the question of how our contemporary society will react not just to North American climate change, but change across the world, and the potentially devastating impacts it may have, e.g., in southeast Asia.

Whitley, Thomas (University of Western Australia)

[174] *Rethinking Experimental Archaeology: GIS and Simulation as a Hypothesis-Testing Mechanism.*

More than 25 years since Allen et al. (1990), GIS has become a tool used almost as ubiquitously in archaeology as the trowel and the total station. But is it a "paradigm-shifter?" One fundamental distinction between archaeology and other scientific pursuits is the lack of a formal experimental procedure for testing large-scale hypotheses. We can work with recreated material culture or anything else on a 1:1 scale. However, ideas about larger mechanisms, particularly those that encompass wide geographic areas, are rarely examined in a formal experimental way. Presented here are the methods and results of a GIS simulation project that functions specifically as a means to examine certain ideas we have about the Helvetian Iron Age subsistence economy during the time of the First Gallic War (58 B.C.). It is first, and foremost, an experiment conducted on a dataset that is not possible to replicate on a 1:1 scale. It also provides explanatory and mechanistic insight into human energetics rather than merely identifying physical correlations in the archaeological record. My contention is that if we embrace the notion that GIS is an experimental tool, then we might move beyond physical landscapes, and begin to examine social and cognitive ones.

Whitmore, Katie M (Department of Anthropology, Purdue University) and Michele R Buzon (Department of Anthropology, Purdue University)

[24] *Living on the Border: Health and Identity during the Colonial Egyptian New Kingdom Period in Nubia*

Tombos is located at the Third Cataract of the Nile River in modern-day Sudan, and marks an important literal and figurative boundary between Egyptian and Nubian interaction. During the New Kingdom Period (1400–1050 B.C.), the cemetery at Tombos in Upper Nubia exhibits the use of Egyptian mortuary practices, including monumental pyramid complexes, likely used by both immigrant Egyptians and local Nubians. Despite the influence of Egyptian culture during this colonial period, there are several public displays of Nubian identity in burial practices found at Tombos. This mixture of Egyptian and Nubian burial practices extends into the postcolonial period at Tombos. Paleopathological analyses indicate that Nubian and Egyptian individuals living at colonial Tombos enjoyed access to nutritional food resources and displayed low levels of skeletal markers of infection, traumatic injury, and strenuous physical activity. While the Tombos sample is likely not representative of all Egyptian-Nubian interaction during the New Kingdom, the individuals examined appear to have benefited from the relationship. In contrast with many situations of frontier interaction, the bioarchaeological evidence indicates a relatively peaceful coexistence between Egyptians and Nubians at Tombos, and the construction of a new biologically and culturally entangled community. Funding: National Science Foundation, National Geographic Society.

Whitridge, Peter (Memorial University of Newfoundland)

[108] *Ambiguous Beings: The Ontological Autonomy of Inuit Dogs*

Part of the attraction of relational ontology is its encouragement to discard conventional epistemological hierarchies. We needn't frame our investigations with the usual weighty themes—economy, social relations, ideology—but can begin anywhere, with any sort of question, and tug on the thread until the archaeological fabric unravels. Here I begin with dogs, and their relations with humans and other animals in the Inuit past. Inuit had an exceptionally complex relationship with the dogs that shared their houses, pulled their sleds, helped them hunt, provided fur (and occasionally food), and generally occupied an ambiguous space between Inuit, non-Inuit humans, and other animals in Inuit belief systems. As beings that in part elected to live closely with humans (they often roamed free in villages) but were also entrapped by them (they exhibit repetitive patterns of stress and trauma due to work and human violence), and that enjoyed equally complex relations with the wild canids that killed them and reproduced with them, dogs represent an interesting opportunity to think about the ontological autonomy of non-human creatures.

Whittaker, John (Grinnell College)

[40] *Teaching Bones from my Garden*

Few of my students have much experience with hunting, farming, anatomy, or even eating meat these days, so teaching faunal analysis labs in an Archaeological Field Methods class can be difficult.

Faunal assemblages from archaeological sites are often small, fragile, and too valuable for class use. They require good comparative collections, and it may be difficult for students to relate to unfamiliar animals and cultures.

A faunal teaching assemblage can be produced from home meat consumption. For over 20 years I have composted all organics from my kitchen, and subsequently collected bone from my garden. A useful assemblage can be created in a much shorter time if the bones are prepared by maceration or dermestids instead of composting. With simple instructional materials, the students can recognize the bones, collect the data, and perform simple quantification like MNI and NISP. The assemblage is then interpretable in terms of preparation techniques, meat preferences, formation processes, socio-

economic status, and so on. My classes always find it engaging to analyze their professor's garbage and interpret his life from it.

Whittaker, John [107] see Kamp, Kathryn

Whittington, Stephen (National Mining Hall of Fame & Museum)

[58] *Challenges and Successes of Some Mesoamerican Exhibits in Small University Museums around the turn of the 21st Century*

Curating exhibits focused on Mesoamerican archaeology in two small university museums between 1993 and 2013 involved challenges with both similarities to and differences from those involved in curating blockbuster exhibits in large museums. Four exhibits included long-term and short-term installations, as well as traveling versions, and focused on the Maya, West Mexico, and Mesoamerica in general. Challenges were small budgets and staffs, negotiating loans and venues with staffs of other institutions, obtaining reproduction rights, interpreting artifacts lacking good contextual information, and incorporating field and laboratory research results in ways understandable to the public. A disheartening and initially unexpected challenge was overcoming criticism from academic archaeologists about basing exhibits on technically legal collections that archaeologists had not excavated. Despite the challenges, the exhibits were popular with the public, provided opportunities to offer associated lectures and events focused on Mesoamerica, drew attention to the Hudson Museum at the University of Maine and the Museum of Anthropology at Wake Forest University, and were utilized in teaching students from primary grades through graduate school.

[202] *Discussant*

Wholey, Heather (West Chester University)

[2] *Trans-egalitarian Society in the Transitional Archaic*

Transitional Period settlement ecology and material culture in eastern Pennsylvania indicates the emergence of a cultural complex expressive of trans-egalitarian society. This includes centralized riverine settlements characterized by large thermally altered features, concentrations of soapstone vessels, and proximity to seasonally predictable food resources, such as migratory fish and drought tolerant herbaceous plants, that could be intensively managed or cultivated. This presentation discusses the warmer and drier climate conditions of the mid-Holocene, and examines the concept of trans-egalitarian society and the practice of alliance feasting as a context for understanding the relatively short-term patterning of the Transitional Archaic.

[2] *Chair*

Whyte, Thomas

[285] *Molded Ceramic Vessels of the Late Prehistoric Appalachian Summit*

Late Woodland ceramic vessels in northwestern North Carolina are highly variable in tempering materials and surface treatments but are nearly limited to jar forms of a limited size range. Coil breaks are found almost exclusively on shoulder, neck, and rim sherds. Vessel bodies sometimes exhibit evidence of net impression underlying rectilinear stamping. These attributes coupled with experimental observations indicate that vessel bodies were often formed in molds. This mode of ceramic vessel manufacture may have been common throughout the Southeast in the late prehistoric period and has important implications for studies involving typology, social interaction, cultural identity, and native craft revitalization.

Wichlacz, Caitlin (Arizona State University)

[66] *Assemblage Perspectives on Salado Polychrome*

The Salado Phenomenon has long been of interest to Southwestern archaeologists, and perhaps the most notable signifier of the phenomenon is a suite of pottery types collectively referred to as Salado Polychromes or Roosevelt Red Wares. Previous researchers have tended to focus their ceramic studies on the Salado Polychrome pottery itself, and few have attempted to situate these vessels within the context of the broader ceramic assemblages of which they were part. Often, this kind of information is limited to a simple reporting of relative frequencies or general statements of temporal trends. Here I assess patterning in ceramic assemblages from several previously excavated non-mortuary contexts within the Salado area using reported vessel type and form data in an attempt to examine aspects of the role and place of Salado Polychrome vessels as they functioned within broader ceramic assemblages, and as they articulated with other local pottery types and forms at the assemblage level. I also assess the potential for this kind of analysis to help archaeologists understand the nature and historical trajectories of the varied manifestations of the Salado Phenomenon across much of the American Southwest.

Widmer, Randolph (University of Houston)

[129] *Lapidary Crafting in the Tlajinga Barrio at Sites 17:S3E1 and 18:S3E1, Teotihuacan*

Fine screened (1 mm mesh) samples obtained from the heavy fractions of flotation samples at the recent excavations in the Tlajinga barrio of Teotihuacan have revealed evidence of extensive lapidary crafting of slate and greenstone. Sorting of the sediments from these samples results in the recovery of minute fragments of lapidary debitage as well as more typical domestic refuse. Evidence will be presented on the types of artifacts being produced, the materials being crafted, and the intensity of production at these two sites. Also these data will be compared with the lapidary craft production at nearby 33:S3W1 that also has evidence of craft production and has already been published. In this presentation I will outline the methodology utilized in this analysis, the reduction sequence of lapidary production of specific artifacts, the raw materials being worked, and the procedure for measuring the intensity of production of lapidary production. What we are discovering is that the Tlajinga district of Teotihuacan has quite intense and diverse lapidary craft production. However, this activity is typically not visible at the macro scale and so requires the use of microartifact recovery and analysis to reveal the nature and intensity of this production.

Wiessner, Pauline

[107] *Discussant*

Wiktorowicz, Conner (Purdue University), Bettina Arnold (University of Wisconsin-Milwaukee), John Wiktorowicz (University of Texas Medical Branch) and Alexander Kurosky (University of Texas Medical Branch)

[103] *A Bloody Mystery: Proteomic Residue Analysis of Funerary Ceramics from the Early Iron Age Heuneburg*

This paper presents the results of a proteomic analysis (protein-based mass spectrometry) of the contents of six ceramic vessels excavated from a burial mound near the Heuneburg, an early Iron Age (640–400 B.C.) hillfort in southwest Germany. One hundred and sixty eight proteins from human, animal, and microbial sources were identified with high confidence and low false discovery rate, demonstrating the suitability of proteomics for discovery-based residue analysis in untreated prehistoric funerary ceramics. More generally, the analysis also validates the viability of proteomic techniques for identifying proteins adsorbed to archaeologically-recovered pottery vessels. Finally, the results obtained revealed a surprising probable cause of death for at least one high-status Iron Age European individual through proteomic technology, at the same time shedding new light on mortuary practices preceding the final deposition of the body in early Iron Age southwest Germany.

Wiktorowicz, John [103] see Wiktorowicz, Conner

Wilcox, David (Itinerant Scholar)

[258] *Synergies of Success: Stories of Avocational/Professional Archeology in Arizona*

The history of archaeology is replete with stories about the synergies that have come from relationships between professional and avocational archaeologists whose cooperation repeatedly has produced significant contributions to knowledge. Recalling some of those stories today is a valuable reminder of how such success is crafted, and perhaps a guide to how it again can be realized. Frank Hamilton Cushing, Erich Schmidt, Byron Cummings, Emil Walter Haury and my own experience provide five such stories from the history of archaeology in Arizona. All benefited from the cooperation of "citizen archaeologists" who provided patronage, access to sites, financial and moral support, field-student excitement, loyalty and labor, or outright collaboration to realize a wide variety of scientific goals. These brief case studies illustrate the diversity of the aesthetics and goals that motivate and inform what it means to conduct what has been regarded as "professional" archaeology.

[258] *Chair*

Wilde, James (AFCEC)

[73] *Moderator*

Wildt, Jennifer [164] see Campbell, Janice

Wildt, Jennifer (Prentice Thomas and Assoc.)

[226] *Ancient Plazas for Modern Cities: A Role for Archaeology in City Planning Today*

For thousands of years, plazas have served as spaces for public gatherings. Modern plazas continue to serve many of the same functions as ancient plazas, providing a foundation for comparative studies. Archaeologists have begun to recognize the importance of incorporating modern studies of public spaces into their work, but in order for archaeology to remain relevant, we must engage with and contribute to studies of the modern world. It is necessary for us to work with scholars in these fields so that our studies can be truly interdisciplinary. In this presentation, I engage with landscape architects and urban planners to show how we can employ archaeological data to contribute to the discussion of modern public spaces. I use a dataset from ancient Maya plazas to support arguments for the continued importance of plazas and parks throughout cities and present this data in a way that is meaningful and useful for city planners. The organization of public spaces in ancient cities serves as a template for the layout of modern cities, creating communities and fostering placemaking.

Wiley, Kevin (SUNY Buffalo)

[188] *Social Networks in the European Neolithic*

This paper will examine applications of Social Network Analysis to cultures of the Middle Neolithic of Central Europe. Implications for this method to better understand circular enclosures will be explored.

[188] *Chair*

Wilkerson, Brenna (UNLV)

[68] *The Proof is in the Pots: Residue Analysis of Virgin Branch Puebloan Ceramics*

This study analyzes ceramics from Virgin Branch Puebloan sites on the Shivwits Plateau and in the Moapa Valley in order to examine differences in the types of foods cooked and stored in each area. Residue analyses, by means of gas chromatography and mass spectrometry, were performed on body sherds from ceramic jars. Three types of wares were included in this research: Shivwits Plain Ware, Moapa Gray Ware, and Tusayan Sand-Tempered. The former two ceramic wares were included in a ceramic distribution network between upland and lowland Virgin Branch Puebloan areas. The data from the residue analyses are presented, and results from the uplands and the lowlands are compared.

Wilkin, Shevan (Department of Anthropology, University of West Florida) and Ignacio A Lazagabaster (Institute of Human Origins, Arizona St. University)

[207] *Specific Skeletal Injuries as a Proxy for Domestic Violence*

The prevalence of violence in past societies is generally assessed through observable skeletal trauma. Common contexts of violence vary from culture to culture, and differences in acceptable forms of violence can be evident after documenting the different shapes, locations, and stages of healing of injuries. Contemporary cross-cultural studies show the physical effects of household violence primarily display on the middle third of the face in female victims, can commonly cause concomitant ante-mortem tooth loss, and are often non-lethal. The universality of these visually detectable indicators of household violence allows us to determine the acceptability and prevalence of household violence within prehistoric groups through the assessment of the frequencies and severity of these injuries. Results from recent studies elaborate the differences in contextual trauma from warfare, raiding, and probable domestic violence within precolumbian Peruvian sites from Middle Horizon (A.D. 600–1000) and Late Intermediate Period (A.D. 1000–1350) settlements in both the highlands of Andahuaylas and the coastal settlements at Ancon. The injuries from each time period will be presented alongside each other to show how the contexts of violence changed over time.

Wilkinson, Patrick (University of California, Merced)

[3] *Keepers of the Cave: The Impact Caretakers Have on the Archaeological Record.*

Caretakers, whether self-appointed or formally selected, have an immense impact on the distribution of material remains at sacred sites in modern day Haiti. This paper examines the ritual use of four caves in Haiti and the effects that four different caretakers have had on the ritual remains left behind after Vodou ceremonies have taken place. These cave/caretaker combinations include publicly accessed caves that are cared for by a cadre of self-appointed homeless men, a cave in private hands managed as a ceremonial/tourist destination, a community managed cave system being transformed into a tourist/festival destination, and a cave managed as part of a national park with a state-appointed caretaker. The patterns of artifact migration in these modern instances can be of use in interpreting the archaeological record of select ceremonial locations with similar use patterns and access.

Wilkinson, Darryl (University of Wisconsin-Madison)

[108] *Relational Empire: The Non-modern Violence of the Inka State*

The use of "relational" approaches in archaeology seems much more prevalent in some contexts as compared to others. Particularly, it is most often invoked with respect to prehistoric hunter-foragers—that is, societies that are "politically non-complex" to use the classic archaeological terms. Perhaps as a result, violence is seldom discussed in the literature on relationality, unless to point out the contrasting violence of modernity itself. Yet for those of us who deal with indigenous empires, the issue of violence is much harder to ignore. So while it may be true that the Inkas also attributed personhood to many nonhumans, if those nonhumans failed to march to the imperial beat, they could be executed for treason or subjected to corporal punishment. In principle then, relationality might be no less amenable to realizing violence and domination than is modernity. In this paper I examine the violent nature of the relational ontologies of the Inkas, and argue that this highlights a significant "blind spot" for the ethical commitments of the relational turn. We are often enjoined to "take seriously" the alternative realities posited by non-Western ontologies, but in practice have avoided doing so where it conflicts with deeply held humanist values.

Willett, Patrick (State University of New York at Buffalo), Peter Biehl (State University of New York at Buffalo) and Ralf Vandam (Research Center for Anatolian Civilization in Ista)

[95] *Exploring the Late Prehistoric (8000–2400 B.C.) Human-Environment Interaction in the Western Taurus Mountains, SW Turkey*

This paper presents a case study on human-environment dynamics in the Burdur Region (SW Turkey) during Late Prehistory (8000–2400 B.C.). Previous archaeological research in the area mainly focused on the fertile lowland areas, which revealed distinctive periods of continuity and collapse of farming communities, followed by a total abandonment of the plain areas for nearly a millennium, i.e., during the Middle Chalcolithic (5500–4100 B.C.). The working hypothesis is that people moved to more temperate regions and/or relocated themselves further upland. By investigating the so-called 'marginal' areas in the landscape we want to define the push-pull factors of marginal landscapes and investigate how different/similar the communities were in these areas in relation to lowland communities. Furthermore, extant regional palaeoenvironmental data will be linked to the findings of the survey. There are strong indications that the region was subject to a long-term climatic deterioration during the Late Prehistoric, particularly during the so-called 8.2ka Event, which may be one cause for the apparent exodus from the lowlands and shift in settlement patterns during the seventh/sixth millennium B.C. Ultimately, it will be attempted to corroborate changes witnessed in the local and regional palaeoenvironmental record with shifting preferences in landscape access and resource exploitation.

Willhite, Brenton (University of Missouri)

[65] *When Should I Stop? Discerning the Minimum Number of Lithic Artifacts Required to Accurately Characterize Mode of Reduction*

Several methodologies have been developed to analyze flaked stone debitage. Among the more popular methodologies are flake typologies similar to Sullivan and Rozen's (1985) "interpretation free typology," which focused on measuring breakage patterns by classifying debitage into complete flakes, broken flakes, flake fragments and debris. While many discussions have focused on the usefulness of these measures, especially in regards to gaining an understanding of reduction methods via the relative proportions of flake types, they fail to document how many artifacts need to be analyzed to accurately reflect these relative proportions. Using several lithic assemblages gathered from 76 Draw, an Animas Phase Site in Luna County, New Mexico, this study uses bootstrapping to discern the optimal range of artifacts required to characterize reduction methods before substantial time is wasted to redundant sampling.

Williams, Travis (University of Michigan)

[6] *[Not] Finding Vann's Quarters: Landscape Dynamics and the Archaeology of the Subaltern on a 19th Century Cherokee Plantation*

Historical archaeologists, to varying degrees, have long been interested in researching the lives of people from the past who left little (and about whom little was left) in the form of textual documentation. In North America and beyond, such interests most often take the form of archaeology of slavery and bondage. Unfortunately, the forces that conspired to prevent the voices of enslaved peoples from entering the historical record (i.e., colonialism, racialization, ethnocentrism, capitalism) have also contributed to the obfuscation or destruction of the material records those peoples left behind. This poster presents findings from research in the context of destruction and its implications for our capacity to understand the past. Through the juxtaposition of historical surveys, decades of aerial photographs, and contemporary, computer-generated map projections, this poster explores the landscape dynamics of an early nineteenth century plantation in the then heart of Cherokee country, contemporary northwest Georgia. It documents the researcher's unsuccessful attempts to find and document a specific slave community, and, more importantly, what can be learned from such a research endeavor.

Williams, Justin (Washington State University)

[40] *The Curriculum Committee's New Curriculum Resource*

When teaching archaeology, professors are tasked with the difficult undertaking of conveying the essence of a hands-on field that often must be taught within the confines of the classroom. This restriction can make creating effective classroom activities and all-inclusive syllabi a challenge. Adding to the difficulty is the emphasis that research receives at conferences. Latest findings from the field are the focus rather than innovative pedagogy. The SAA's Principles of Archaeological Ethics stresses that, as educators, we effectively disseminate archaeological information to a wider audience. This audience includes our students. In order to promote, distribute, and encourage the creation of innovative and effective materials for archaeology courses, we are excited to announce that the Committee on Curriculum has created a new online Curriculum Resource as part of the SAA website. SAA members will be able to download examples of engaging classroom activities and syllabi from a wide range of courses. This poster highlights some materials that will be included in the online Curriculum Resource. It further outlines the process through which archaeologists can submit their own pedagogical materials to share with the SAA online community. This resource will be useful for both new and veteran archaeology professors.

[40] *Chair*

Williams, Veronica [57] see Daltroy, Terence

Williams, Patrick Ryan (Chicago Field Museum), Donna Nash (UNC-Greensboro), Anita Cook (Catholic University of American) and William Isbell (SUNY-Binghamton)

[91] *Wari Ceramic Production in the Heartland and Provinces*

Between 500 and 600 A.D., the first expansive state of the central highlands of Peru emerged in the Ayacucho Basin. This state, known as Wari after its capital city located in the same region, established far flung colonies covering much of the mountainous region of modern day Peru. Research in the heartland sites of Conchopata and Wari and in the provincial sites of Cerros Baul and Mejia have yielded new insights into the economic production of the early imperial state, including significant new data on ceramic production and consumption. In this poster, we examine the geochemical diversity in a ceramic sample from both heartland and provincial sites using INAA to better understand the political economy of ceramic production in heartland and provincial contexts.

[219] *Discussant*

[219] *Chair*

Williams, Veronica (CONICET- UBA)

[259] *Landscape, Social Memory, and Materiality at Calchaqui Valley during Inka Domination in Northwest Argentina*

Within its territory, the Inka adapted their rule of such diverse spheres as political economy, ideology, and identity, among others, which explains in part the diversity and disparity seen in the empire. In Collasuyu, Inka buildings were common but it is evident that their features, dimensions, monumentality and spatial density show contrasting regional differences. New evidence regarding Inka occupation in Northwest Argentina shows different situations of Inka conquest and domination expressed in landscape, memory, and materiality, as seen through the example of the complex process of population assimilation in the Calchaqui valley.

Williamson, Christian (Syracuse University) and Douglas Armstrong (Syracuse University)

[126] *Housing and Living Areas of the Enslaved and Free Servants at the Magens House Compound, St. Thomas*

By the beginning of the nineteenth century, the enslaved represented sixty-two percent of the urban population on the island of St Thomas in the Danish West Indies. While St. Thomas never held slave populations comparable to the other colonial empires in the Caribbean, it was an extremely important transshipment hub for the Caribbean and beyond. Slavery within the urban port setting of Charlotte Amalie, St. Thomas differed radically from the rural plantations, presenting the enslaved within the city economic opportunities and social negotiations not afforded to their rural counterparts. Though only a small number of slaves resided at the Magens House Compound, their impact appears briefly in the tax records and more substantially in the material record via artifact assemblages associated with the outbuildings and evidence of local craft industry participation on site. A microhistorical perspective will explore how the enslaved at the Magens House directly shaped their own spaces within and across a tightly controlled urban compound.

Williford, Carl [206] see Menzer, Jeremy

Willis, William (University of Nevada Las Vegas)

[68] *Not Just any Stones: Virgin Branch Puebloan Sandstone Artifact Distribution on the Southern Shivwits Plateau*

Throughout the summer of 2015, graduate students at the University of Nevada Las Vegas began the data mining of over 20 years of archaeological site forms pertaining to the prehistoric occupation of the southern portion of the Shivwits Plateau in Northern Arizona. This data, as collected by the National Park Service, was organized and placed into a geodatabase, allowing for the first time a thorough spatial investigation of artifact distributions associated with the upland Virgin Branch Puebloan. During the preliminary exploration of this data, it was discovered that the distributions and concentrations of sandstone artifacts within this region were clustered in a spatially significant pattern. This research investigates what role such artifacts may have had in regards to the lifeways of the Virgin Branch Puebloan, and specifically it addresses the potential role sandstone played in resource processing.

[68] *Chair*

Willis, Kelsey and Clifford Brown (Dr.)

[163] *The Ceramics of San Antonio, a Site on the Pacific Coastal Plain of Chinandega, Nicaragua*

Since 2009, Florida Atlantic University has been carrying out archaeological survey and excavation in the Department of Chinandega, Nicaragua jointly with the Dirección de Patrimonio Cultural. Objectives of this research include establishing an artifact sequence and studying sociocultural processes such as the evolution of social complexity, interregional interaction, and migration. Found in 2009, the site of San Antonio is located between the cities of El Viejo and Chinandega. A single 2x2 m test pit and a 50 cm diameter shovel test were excavated at the site. In the summer of 2015, I studied the San Antonio ceramics using the Type: Variety mode system of classification. I found that the assemblage was dominated by Late Preclassic Usulután related groups and wares, including Izalco, Olucitla, and Bolo; and Pinos Brown-black and Canchon Fine Incised; and Santa Tecla Red. The deposit exhibits cultural stratigraphy. Modest quantities of apparently later unslipped and red-slipped wares occur above the higher of two floors revealed in the excavation; below that floor and associated with a second, lower floor, the Late Preclassic deposit is uncontaminated with later materials. I interpret the site as containing a Uapala or Verbena-Arenal sphere occupation closely linked to contemporaneous cultures in El Salvador.

Willis, Mark [168] see Hard, Robert

Willison, Megan (University of Connecticut) and Kevin McBride (University of Connecticut)

[61] *Indigenous Metalworking: An Examination of Metal Production and Use During the Pequot War*

One of the most iconic moments of the Pequot War was the massacre at Mystic Fort, an event which occurred on May 26, 1637, and took the lives of hundreds of Pequot men, women, and children. Immediately following the massacre, the English retreated back to their ships and were followed by

returning Pequot warriors. This paper will examine the native cuprous and ferrous objects recovered along various points of engagement on the English retreat route and analyze them in relation to metallic objects recovered from Mystic Fort and a nearby small Pequot settlement. Through the comparison of artifacts recovered on the retreat route with those found in domestic settings, it can be discerned if and how the Pequot repurposed cuprous trade items and if there are discernible patterns and reasons for the creation and use of cuprous "scrap" items. This research has implications for understanding the role of metal production in domestic contexts and the significance or lack thereof of cuprous scrap metal.

Wills, Chip (University of New Mexico)

[55] *Discussant*

Wilshusen, Richard (PaleoCultural Research Group)

[243] *Mining Data, Protecting Historic Landscapes, and Understanding the Past*

Forty years ago Bill Lipe dared archaeologists to fundamentally change their views about archaeological practice. We were like miners, exploiting a non-renewable resource. If we were to have a future we would need to practice conservation as well as salvage, and education as well as preservation. Lipe published his 1974 Kiva article just as CRM and modern government archaeology were coming into being. Today, we live in a fundamentally different archaeological culture: there are four times as many CRM and government archaeologists as there are professors teaching archaeology; SHPOs are annually making more than 100,000 determinations of National Register eligibility, and agencies treat many of these sites as if they were listed; in the southwest alone there are more than 50 national parks or monuments highlighting archaeological resources. Increasingly our challenge is how to "mine" and take advantage of the sheer quantity of archaeological observations produced each year. How do we sift through all the site forms and dots on maps to do better archaeology, plan for the future, and support great research? Following in Lipe's footsteps, I propose a model of archaeological practice that challenges academic, government, and CRM archaeology to chart a common course.

Wilson, Jeremy [111] see Flood, John

Wilson, Nathan (Arizona State University) and Philip J. Arnold III (Loyola University-Chicago)

[216] *Lithic Production and Procurement at Teotepac, Veracruz, Mexico*

In this paper we present new data on lithic production, consumption, and importation during the Early and Middle Classic Periods (A.D. 300–650) at the site of Teotepac, located in the Sierra de los Tuxtlas region of Veracruz, Mexico. Using the results of recently completed technological and visual source analyses, we identify differences in production and consumption behavior across the site and over time, and situate this behavior within the larger region. Changes in importation in the region have been identified during the Early Classic Period, some of which were associated with the Teotihuacan-affiliated site of Matcacapan. The combination of regional-scale data from previous projects and site-level data (both from surface collection and excavated contexts) from the Proyecto Arqueológico Teotepac allow us to characterize behavior associated with production and use of lithic materials at Teotepac and gauge the site's participation in larger regional processes.

Wilson, Jeremy (Indiana University-Purdue University, Indianapolis), Lucas Stamps (Indiana University-Purdue University, Indianapolis), William Gilhooly (Indiana University-Purdue University, Indianapolis) and Broxton Bird (Indiana University-Purdue University, Indianapolis)

[285] *Climate Change, Subsistence and Warfare during the Late Precolumbian Period in the Lower Midwest*

Archaeologists are increasingly turning to climate change as part of their explanatory models of regional and interregional population movement, socio-cultural transformation, and the dissolution of societies in North America. In the lower Midwest, both megadroughts and megafloods have been invoked to explain declining agricultural returns, rises in conflict, and abandonment of major river valleys during the latter half of the Mississippian Period. However, the data sources and indices recording rainfall and drought have often been extrapolated over broad geographic expanses, introducing unnecessary ambiguity.

Here, we deliver the first high-resolution record of hydroclimate change over the last 2,500 years in the Midwest. These data are examined in conjunction with the isotopic record for subsistence change and the spatiotemporal patterning of fortified settlements. Sediment cores from lakes in Indiana provided isotopic and lithologic data that demonstrate considerable fluctuations in atmospheric moisture during the Medieval Climate Anomaly (MCA) and subsequent Little Ice Age (LIA). A prolonged wet period during and prior to the MCA is followed by a LIA-era drought that lasted for approximately 500 years. This research convincingly demonstrates a close relationship between prolonged severe drought and population dynamics during the depopulation of the lower Midwest between A.D. 1300 and 1450.

Winchell, Frank, Chris Stevens (University College London Institute of Archaeology), Charlene Murphy (University College London Institute of Archaeology), Louis Champion (University College London Institute of Archaeology) and Dorian Fuller (University College London Institute of Archaeology)

[177] *Cereals and Ceramics: Another Look at the Late Neolithic Development of the Butana Group in Eastern Sudan during the 4th Millennium BC*

This paper will discuss the new findings of domesticated sorghum along with the ceramics associated with the Butana Group at an archaeological site called, KG23. The Butana Group represents a cultural manifestation in the southern Atbai of the far eastern Sahel that dates around 3500–3000 B.C., and was contemporary with other groups such as the Late Neolithic groups in the central Nile Valley, the pre-Kerma culture in Upper Nubia, the A-Group in Lower Nubia, and the Egyptian Predynastic cultures of Upper Egypt. Recent archaeobotanical evidence recovered from organic-tempered pottery sherds from the largest Butana Group site, KG23, demonstrates that peoples associated with this group were in the process of domesticating sorghum in the fourth millennium B.C.

Windes, Thomas [17] see Peebles, Matt

Winemiller, Terrance [238] see McKillop, Heather

Wingfield, Erin [265] see Morehouse, Rebecca

Winter, Barbara [38] see Brown, Kelly

Wissler, Amanda [181] see Budd, Tommy

Witt, Kelsey (University of Illinois at Urbana-Champaign), Inge Lundstroem (University of Copenhagen) and Ripan Malhi (University of Illinois at Urbana-Champaign)

[84] *Mitogenome Sequencing Of Ancient Dogs In The Americas: Assessing Dog Genetic Diversity and Population History*

Mitochondrial DNA of ancient dogs in the Americas has been studied extensively, but most studies focus solely on the hypervariable region. We sequenced the complete mitochondrial genomes (mitogenomes) of dogs in the Americas from multiple geographic regions and time periods in order to compare populations between regions as well as to compare the genetic diversity of ancient dogs in the Americas to modern dogs worldwide. When comparing the HVR and mitogenome data, we found that the two data sets show different results when examining population diversity and structure; dogs have a great deal of genetic diversity outside of the hypervariable region, so sequencing the complete mitogenome is necessary for accurately characterizing the genetic diversity of ancient dog populations. We identified novel haplotypes in the ancient dog population, and found that some dog populations have high levels of diversity while others are much more homogeneous, suggesting a small founding population. With the breadth of our sampling, we also constructed a Bayesian Skyline Plot to model changes in dog population history over time, as well as to estimate the timing of dog arrival to the Americas.

Witt, David [197] see Primeau, Kristy

Witt, David (NYS Department of Environmental Conservation), Charles Vandrei (NYS Department of Environmental Conservation) and Kristy Primeau (NYS Department of Environmental Conservation)

[208] *Lessons from the Field: The Intersection of Field Schools and Public Land Management Concerns*

The New York State Department of Environmental Conservation manages approximately 4 million acres of state owned land and an additional 910,000 acres through conservation easements with the stated goal "to conserve, improve, and protect New York's natural resources and environment..." New York state law interprets "environment" broadly, including cultural and historic resources within the concept. Thousands of archaeological sites, ranging from Archaic camps to Revolutionary War battlefields to historic plane crash sites, are located on, and enhance the value of, state land, and NYSDEC is charged with their conservation. This paper discusses the role that NYSDEC plays in managing these resources and how the agency cooperates with colleges throughout the state as they conduct field schools on various sites. We will focus on the inherent contradictions present within the goal of "conserving" cultural resources, while also working with schools to obtain the information necessary to better manage those very resources for the public good and train future generations of archaeologists in the skills required to manage cultural resources.

Witt, Rachel (Tulane University) and Kimberly Munro (Louisiana State University)

[276] *Ritualistic Nature of Juvenile Interments, Cosma Archaeological Complex, Ancash, Perú*

Research exploring mortuary treatments, morbidity, and trauma among juveniles has largely been left out of bioarchaeological discussions due to the difficulties subadult skeletal remains present to archaeological investigations. Despite these limitations, analysis of juvenile burials and skeletal remains has the potential to improve our understanding of the physical and social lives of children in the past. Excavations conducted by Proyecto Investigación Arqueológico Distrito del Cáceres Ancash (PIADCA) during the 2014 and 2015 season uncovered 11 juvenile interments on the main temple platform Karecoto dating to the Early Horizon (800–200 B.C.) at the site of Cosma, located in the Cordillera Negra (at 2,600 masl) in the Nepeña Valley of north-central Perú. Systematic analysis of the mortuary patterns and skeletal remains indicate that the interments are secondary burials that may have served as ritual offerings. Additionally, the skeletal sample is of paleopathological interest as several individuals exhibit systemic infections, traumatic injuries, and abnormal dental conditions. Bioarchaeological investigations of this particular sample have the potential to contribute to our knowledge of juvenile health and demonstrate that subadults were participating and active agents in Peruvian prehistory.

Wlodarczak, Piotr [24] see Toussaint, Mark

Wolf, Marc (GC CUNY) and Katherine Miller Wolf (Indiana University East)

[130] *Creating an Interdisciplinary Map of Social and Environmental Change through Topography and Bioarchaeology*

Societal change does not occur in a vacuum and marks the social and physical landscape in a myriad of ways. The natural world—the lived in landscape—is the most pervasive and enduring reminder and example of social order. Water is a staple of both domestic and ritual life and leaves its mark in architectural and biological manifestations of society. Mountains, caves, and ravines and other landscape monuments are emblematic of regional geology and influence the local human population both at the societal level and within the body's biogeochemistry. The environment leaves unambiguous markers on human remains as well cultural perceptions of space and development. This paper discusses how Geographic Information Systems (GPS) data, spatial analysis, and bioarchaeological data (radiogenic strontium data) can effectively map societal change of cities at frontiers or transition zones. While northwestern Belize is often the 'laboratory' of ideas and conceptualizations, our case studies will include examples from archaeological sites in the Guatemalan Transversal and Petén regions as well as from Honduras and the Copan Valley at the proposed Maya southern frontier.

Wolff, Sarah (University of Arizona)

[82] *Food on Parade: The Use of Food to Create Social Identity and Differences within the Post-Civil War U.S. Army at Fort Laramie, Wyoming*

On a remote frontier fort where conspicuous consumption materials were limited, officers and enlisted men reinforced distinct hierarchical social status identities through differential food consumption. While status differences in the military are primarily signaled through rank insignia and uniform elements, I intend to focus this paper on differences in diet to better understand the maintenance of Victorian class structure at Fort Laramie from 1870–1890. A zooarchaeological and historical document analysis demonstrates that while enlisted men and officers had similar rations, their diets were different in many respects. Officers maintained greater diet diversity because they were the only ones who regularly hunted wild game. In addition, officers regularly purchase canned meats, fruits, and vegetables. This research increases our knowledge of the everyday life and social relationships between officers and enlisted men in the U.S. Army in the late nineteenth century.

Wolff, Marc [162] see Fash, Barbara

Wolff, Christopher (SUNY-Plattsburgh)

[217] *The Beat Goes On: A Continuation of J. Louis Giddings' Research Into a Late Western Thule Drum from Cape Krusenstern, Alaska*

This paper examines a small drum that Giddings found in 1959 within a Late Western Thule structure on Cape Krusenstern, and places it within a broader historical context of drum production and use among prehistoric and historic groups within the region surrounding the Chukchi Sea and across the North American Arctic. Giddings only published a brief description and interpretation of the drum, despite elsewhere providing vivid depictions of the use of drums among Arctic peoples. The author's recent examination of the drum identified distinct characteristics found in much later ethnographic Canadian Inuit and Alaskan Iñupiat examples, suggesting that aspects of their drum-making traditions are quite ancient, and date to at least the Late Western Thule period (A.D. 1300-1400). The small size and construction of the Krusenstern drum led Giddings to propose that it may have been a toy, as it was significantly smaller than 19th century and later Arctic drums familiar to him. The author offers an alternate interpretation of the drum as a possible shamanic instrument—rather than a toy—based on research not available to Giddings before his death, as well as recent documentation by the author of hundreds of Arctic drums and associated parts from various periods.

Wolfhagen, Jesse (Stony Brook University)

[176] *Age and Sex Composition of Zooarchaeological Measurements via Bayesian Mixture Models*

Zooarchaeologists reconstruct age- and sex-specific animal mortality profiles in order to examine past human strategies of animal exploitation. Traditionally, animal age structures and sex ratios were derived from complementary but distinct data (e.g., age via epiphyseal fusion data, sex via bone morphology or metrics), though recent research has highlighted the value of integrating these data. This paper describes how zooarchaeologists can further that integration by fitting standard zooarchaeological measurements to mixture models via Bayesian inference. Bayesian inference emphasizes the probabilistic nature of sex identifications (inherent in all zooarchaeological analyses), which can be used to estimate sex proportions of different subsets of the assemblage via Monte Carlo integration. It also provides a flexible framework for incorporating prior knowledge about mortality patterns and comparing competing hypotheses about exploitation patterns. This paper demonstrates the utility of Bayesian mixture models using sheep (*Ovis aries*) remains from the Neolithic site of Catalhöyük (Turkey; ca. 7200–6500 cal B.C.E.). The model provides age and sex proportions for both the hunted and the herded sheep populations. Bayesian mixture models can thus explore synchronic and diachronic changes in the composition of herds in a straightforward manner that relies on commonly recorded zooarchaeological evidence.

Wolfhagen, Jesse [176] see Otárola-Castillo, Erik

Woloszyn, Janusz (Institute of Archaeology, University of Warsaw)

[45] *Enemies—Strangers—Neighbours. Image of the Others in Moche Culture*

Moche art served the purpose of not only disseminating specific content of a religious nature, but it was also a tool of social influence and control. Its iconography gives an exceptional opportunity to study the mechanisms of perceiving and presenting others (representatives of different cultural and probably also ethnic group) by a society which has not left behind any written documents for us. It is also interesting how these representations could be used in the process of shaping (reinforcing) the coastal population's own group identity. In this paper, I try to answer the question of how the information regarding neighbors was built, what its concept could be and what social functions it could serve among the groups living in the Southern Moche Region (the area bordering with a territory occupied by a culturally separate population, related—presumably—to another polity or polities).

Wolverton, Steve [65] see Brown, Andrew

Womack, Andrew [106] see Flad, Rowan

Wood, J. Scott [66] see Herr, Sarah

Woodfill, Brent (University of Minnesota)

[59] *Large-Scale Production of Basic Commodities at Salinas de los Nueve Cerros, Guatemala: Implications for Ancient Maya Political Economy*

Salinas de los Nueve Cerros is a major Precolumbian Maya city that grew around the only non-coastal salt source in the Maya lowlands. Residents of the city were able to transform the neighborhoods adjacent to and atop the salt dome into a large-scale production operation with the capacity to produce over 10,000 metric tons of salt a year, which were then distributed throughout the western lowlands via the Chixoy, Pasión, and Usumacinta river networks. By the Late Classic period, the city had expanded into the production and trade of other commodities that were locally produced (including agricultural and pescacultural goods) and traded from farther upriver. Investigations at Nueve Cerros since 2010 have shown that the salt source and basic production was tightly controlled by the local elite—workshops were associated with administrative structures containing the tombs of important individuals—although some phases of production or refining appear to have taken place throughout the site in each of the different neighborhoods under investigation.

Woods, Aaron [24] see Harrod, Ryan

Woods, Aaron (University of Nevada, Las Vegas) and Ryan Harrod (University of Alaska, Anchorage)

[104] *More than Just Bones: A Biocultural Analysis of Fremont Human Remains*

Many existing studies of Fremont mortuary data have been limited to documenting the location of burials, the presence or absence of burial goods, and the position of the remains.

Furthermore, much of the analyses of Fremont human skeletal remains have focused almost exclusively on population-level comparisons or evidence of extreme violence. Current bioarchaeological methods have expanded the type of questions that researchers can ask. Equipped with hypotheses influenced by social theory, it is possible for analysts to discover additional aspects of quotidian Fremont life. The observation of stress and disease indicators, refined methods of assessing entheses or musculoskeletal markers, and a growing understanding of how acts of non-lethal violence can be seen on the bones provide an expanded view of how individuals lived and died. This paper presents the results of several bioarchaeological analyses performed on Fremont skeletal remains in an effort to improve our understanding of the more social aspects of life in the Fremont Regional System.

Wooler, Matthew J. [124] see Glassburn, Crystal

Woollett, James [95] see Adderley, Paul

Worman, F. Scott (Missouri State University), Anastasia Steffen (Valles Caldera National Preserve) and William Wedenoja (Missouri State University)

[66] *Field Schools as Public and Applied Archaeology*

Field schools serve the vital functions of training students in basic research methods and introducing them to the realities of field-based investigations. Beyond that, they typically have been a venue for faculty to pursue their own research agendas. In this paper I present information about two field schools, one in Jamaica focused on community-engaged public archaeology, and a second in New Mexico emphasizing cultural resource management (CRM) as applied archaeology. I evaluate the strengths and weaknesses of these approaches relative to traditional field schools. Specifically, I examine their efficacy in training students in survey and excavation techniques, introducing them to the broader contexts of archaeological investigations, and producing tangible research outcomes. I also assess the degree to which the field schools succeeded as public and applied archaeology, discuss the costs and benefits of these approaches for students, faculty, and local communities, and identify ways to improve each of these outcomes.

Worth, John (Univ. of West Florida)

[213] *Materialized Landscapes of Practice: Exploring Native American Ceramic Variability in the Historic-Era Southeastern United States*

Despite the fact that archaeological ceramics have long been viewed as a proxy for ethno-political identity, recent research exploring the precise relationship between ceramics and identity during the historic-era southeastern United States provides increasing support for the conclusion that geographic variability in archaeological ceramics is best viewed through the lens of practice, and that archaeological phases correspond better to communities of practice than communities of identity. When viewed through the lens of practice theory and social learning theory, it becomes clear that the coexistence of both communities of practice and communities of identity within the same social landscape does not guarantee automatic correspondence between the two realms, nor even does any demonstrated correspondence necessarily prove a causal link between a community of practice and a community of identity that happen to be coterminous. Each type of community must be studied independently using appropriate and available data, and only by first disentangling the two can any demonstrable connection between communities of practice (such as archaeological phases) and communities of identity (such as historically-documented polities or ethnies) be established empirically. Only then can the exact reasons for any congruence (or lack thereof) be explored in a systematic and rigorous manner.

Worthington, Brian [222] see Colten, Roger

Wright, Alice (Appalachian State University)

[17] *Gateways and Gatherings: Economic, Ideological, and Social Networks of Southeastern Hopewell*

The existence of the Hopewell Core—the concentration of remarkable ceremonial assemblages and geometric earthworks in the Ohio River Valley—presupposes the existence of a Hopewell Periphery, a social space that includes large swaths of the American Southeast. Often, archaeologists have attributed Hopewellian material culture at southeastern sites to their role as gateway centers facilitating the exchange and transfer of special raw materials through the Hopewell Interaction Sphere. Alternative proposals have suggested that certain southeastern sites may have served as pilgrimage centers where dispersed communities gathered to participate in Hopewellian ceremonial activities. While such economic and ideological scenarios are not mutually exclusive, we suggest that it may be possible to distinguish between them by considering macro-scalar connectivity across the Hopewellian social network. Using social network analysis in a GIS framework, we consider how multiple lines of evidence—geographic location, monumental architecture, exotic raw materials, and finished craft objects—support or refute such interpretations of major Hopewellian sites in the Southeast, clarify the structure of the Hopewell Interaction Sphere, and raise new questions about Middle Woodland connections across eastern North America.

[48] *Discussant*

[17] *Chair*

Wright, Alice [17] see Mills, Barbara

Wright, Joshua (Oberlin College), Sarah E. Jackson (University of Cincinnati), Christopher F. Motz (University of Cincinnati) and Linda A. Brown (The George Washington University)

[27] *Categories, Space, and New Perspectives in A Late Classic Maya Community*

An interest in indigenous viewpoints has grown in recent years in archaeology, coupled with a commitment to integrating these perspectives more closely into the excavation process. To facilitate this there is a need for field recording systems that offer a means of incorporating the multivocality reflected in various perspectives, which can include not only alternative interpretations but also category systems for the archaeological data recovered. The Say Kah Archaeological Project, in the Programme for Belize area in northwestern Belize, has developed a field recording system that integrates an active onsite database with a system of indigenous Classic Maya categories of objects and places (derived from hieroglyphic, iconographic, and comparative ethnographic evidence) in a combined FileMaker-based system, used by archaeologists in the field on iPads. This links with the project's GIS to give these categories a central role in the spatial record of the site and provide new perspectives on ancient Maya settlements and the experience thereof. In this paper, we discuss how our recording system worked to incorporate Maya understandings of materials in the excavation and documentation of the site and how we used these understandings to produce alternative spatial visualizations based on archaeological data.

Wright, Rita (New York University)**[107]** *Engineering Feats and Consequences in the Indus: Workers in the Night*

Water tanks, sump pits, street drains, toilets, sewage drains, shaft wells, bathing platforms and other waste management amenities are among the visible landmarks of the cities of the Indus civilization. While they did provide conveniences for city dwellers, there were certain inequities in the types of amenities associated with individual households, but it was in the interest of all to keep the system in working order. There is no direct evidence for the complex network and infrastructural arrangements that made the system work, but using modern cities as examples, optimal times to clean waste pits, flush drains, and remove unpleasant deposits would have been those few hours between the end of the night hours and dawn. In this paper, I explore the efficacy of the night, phases of the moon, and the open skies in Indus cities and the technical specialists that maintained them.

Wright, Mark (Brigham Young University)**[117]** *Homicide or Deicide? The Function of Deity Impersonation in Mesoamerican Sacrificial Rituals*

In Mesoamerican belief systems, deity impersonation rituals temporarily transformed human agents into divine beings. While donning the accoutrements of specific deities during ritual activity, they merged with and became literal embodiments of those gods, essentially becoming both functionally and ontologically divine for the duration of the ritual. In rituals of human sacrifice, both victim and executioner were typically bedecked in the costuming of specific gods, indicating that these were also deity impersonation rituals. As such, the participants would not have been viewed as mere human actors but rather as literal embodiments of the gods (despite the compulsory nature of the impersonation ritual on the part of the victim). The recognition that these were impersonation events dramatically elevates their cosmological import; ritual human sacrifices were not mere "re-enactments" in the sense that they commemorated or even emulated mythological events, but conceptually and functionally they enabled the sacrifice a living, breathing god.

Wright, Aaron and Will Russell (Arizona State University)**[195]** *Home Bodies: An Examination of House Cremation among the Hohokam*

During the pre-Classic era (ca. A.D. 400–1150), pithouses and houses-in-pits were the preferred modes of residential architecture among Hohokam communities. When excavated, these wood-framed domiciles often show signs of burning, which effectively closed the structures' lifecycles as dwellings. Among affiliated and descendant communities such as the O'odham and some Yuman-speaking groups, a person's death could prompt the burning of their home in order to combat any pollution, sickness, or witchcraft associated with the decedent. Fire was also used to transmute the dwelling and other personal possessions so that they could accompany the deceased into the realm of the dead. Understandably, many researchers perceive Hohokam house burning in a similar quasi-functional light—i.e., as a way to meet the needs of humans, whether dead or alive. Alternatively, we frame Hohokam house burning through a relational, animistic perspective. Based on a comparison of offerings in Hohokam cremations to ritualized floor assemblages of burned houses, we suggest that some houses were conceptualized as other-than-human persons, perhaps even family members. At the end of their lives, some Hohokam dwellings were ritually prepared, given funerary offerings, and then burned in what amounts to architectural cremation.

[195] *Chair***Wright, Holly (University of York)****[261]** *ARIADNE: Building a European Data Infrastructure for Archaeology*

ARIADNE is a four-year EU FP7 Infrastructures funded project, made up of 24 partners across 16 European countries, which hold archaeological data in at least 13 languages. These are the accumulated outcome of the research of individuals, teams and institutions, but form a vast and fragmented corpus, and their potential has been constrained by difficult access and non-homogeneous perspectives. ARIADNE aims to bring together and integrate existing archaeological research data infrastructures, so researchers can use these distributed datasets in combination, and in new ways. This paper will give an overview of the progress of the ARIADNE project, focusing on efforts to create a shared cyber-infrastructure into which metadata is gathered, and a portal to allow cross-search of this metadata. To this end, mapping work has been carried out to facilitate searching across space, time and subjects, using Linked Open Data (LOD). This work represents LOD best practice by incorporating existing international initiatives such as the Getty Art & Architecture Thesaurus, and Pelagios/Pleiades, and contributing to emerging best practice initiatives like PeriodO. As ARIADNE enters its final year, conclusions can begin to be drawn about the challenges faced along the way, and possible directions for the future.

Wriston, Teresa (Desert Research Institute) and Gary Haynes (University of Nevada, Reno)**[177]** *Late Holocene Foraging and Early Farming in Northwestern Zimbabwe: Excavations and Analysis of Rock Shelters and an Open-Air Village Site*

Archaeological sites in Hwange National Park, northwestern Zimbabwe, record how and when food production expanded into this part of southern Africa. An examined early farming village contains diagnostic comb-stamped and channeled thickware pottery and copper bangles dated to 1800 and 1200 cal B.P. This earliest farming community supplemented crops with hunted local wild game, but left no evidence of direct contact with indigenous hunter-gatherers who had repeatedly occupied rock shelters 30 km away since before 6000 cal B.P. The biggest excavated shelter that was occupied by the foragers served as an aggregation site between 4000 and 3000 cal B.P.; however, after 2400 cal B.P., forager use of the rock shelters dwindled to only seasonal occupations by individual families or a few individuals who preferred smaller, more private shelters, perhaps in reaction to expanding farming communities. Around 800 cal B.P., sherds of burnished wares and a glass bead are intermixed with the traditional hunter-gatherer lithic, osseous, and OES assemblage, affording the first archaeological evidence of significant interaction between the indigenous hunter-gatherers and the farmers.

Wrobel, Gabriel (Michigan State University) and Amy Michael (Michigan State University)**[116]** *Discerning Patterns of Intentional and Unintentional Movement of Human Bones in Maya Caves*

The caves of Central Belize were used extensively by the Maya, primarily during the Late Preclassic and Classic periods (approx. 300 B.C. to A.D. 900). Archaeological investigations of human bone deposits in these caves typically seek to identify specific mortuary rituals, often based on analogy with ethnohistoric, epigraphic, and artistic sources, and to interpret these behaviors within broader sociopolitical and environmental contexts. However, because of the long history of cave use in the area and repeated deposition on ground surfaces, many of these complex deposits are palimpsests, which complicates analyses in a number of ways. Bioarchaeologists aid in cave studies by identifying and differentiating a variety of influences acting in concert to move and displace bones, including intentional behaviors associated with elaborate and prolonged mortuary rituals and taphonomic processes (particularly water flow and looters' activity). We discuss current bioarchaeological approaches to the study of Maya mortuary caves and provide case examples in which we compare contrasting data derived from in situ and lab analyses of bones found in the terminal and middle chambers of Actun Kabul.

[158] *Discussant*

Wroth, Kristen (Boston University)

[146] *Phytolith Analysis at Roc de Marsal, SW France*

Phytolith analysis at Roc de Marsal, a Middle Paleolithic cave site, SW France, is used to investigate both environmental change and hominin behavior. Specifically, the aims include correlating phytolith types with the microenvironmental context of the site, and how these conditions changed diachronically. We also explore the pyrotechnological skills of Neanderthals at the site, broad patterns of plant acquisition and use, and spatial differentiation. Preliminary analysis of phytolith samples collected in previous years demonstrated diachronic change in phytolith assemblages, differences in plant matter concentrations in three main zones, and behavioral clues (e.g., use of wood/bark as fuel and over representation of specific grass types). This poster presents a synthetic study of previously collected samples with the analysis of new, high resolution material collected in 2015. The present study includes 1) assessing whether phytolith deposition was due to natural forces or Neanderthal action; 2) mapping phytolith concentrations across specific levels, as well as diachronically to more specifically assess spatial patterning; 3) comparing phytolith assemblages with known combustion features and artifact concentrations; and 4) combining phytolith data with other lines of evidence to understand key ecological shifts and how plant remains tie into the larger picture of Neanderthal action at RDM.

Wu, Mu-Chun (National Taiwan University) and Maa-Ling Chen (National Taiwan University)

[106] *GIS as a Heuristic Tool: Revisiting Spatial Concepts in the Paiwan Landscape*

This research showcases how Geographic Information System (GIS) serves as a heuristic interface to visualise obscure spatial concepts and further facilitates researchers to explore how these concepts influence people's perception of and interaction with the landscape. The abandoned slate-stone settlements of Paiwan are one of their most distinct icons. However, their spatial location and their relation with the wider regional landscape were not thoroughly investigated. This research utilises analytical functions, such as site catchment, least-cost path and viewshed, to emulate the experience of an 'agent' and examine how past Paiwan people would possibly perceive the inhabited landscape. The results have shown distinct characteristics and regional variations of how settlements were situated in the landscape amongst Paiwan subgroups. These characteristics and variations could have been significant influential factors both in their perception of the landscape and in the construction of their landscape conception. The result not only allows for comparison with the contemporary Paiwan landscape imagination, but can also inspire more discussion themes and directions.

Wu, Xiaohong (Peking University) and Ofer Bar Yosef (Harvard University)

[173] *The Chronology of Early Pottery in South China*

Human evolution is punctuated by inventions and innovations. One of the important inventions in the development of Chinese civilization was pottery. Cooking and steaming are two of the processes that change the nature of the food. The same are parching and grilling, or chopping meat and vegetables into very small pieces. The archaeology of South China uncovered the earliest pots in the records in East Asia. In this presentation the dating of pottery bearing layers in three cave sites from this vast region will be discussed. The dates from sites such as Yuchnayan and Xianrendong were already published. A new cave that produced similar results was publicized this year. All three sites produced fragments of early types of pots that are similar although the caves are separated by a distance of 400-500 km between them. The early dates range from 20/19 Ka cal B.P. and 18/17Ka cal B.P. Stratified pottery fragments from the later layers and additional sites indicate that the use of this invention continued from hunting and gathering societies into the time when Neolithic farming was established.

Wu, Xiangqun (Jilin University), Xu Zhang (Chinese Academy of Social Sciences) and Hong Zhu (Jilin University)

[180] *The Health and Nutritional Condition Research on the Skeletal Human Remains from Dabaoshan in Inner Mongolia, China*

Dabaoshan cemetery (2300–2200 B.P.) is a recently excavated archaeological site in south central Inner Mongolia, China. Human remains from Dabaoshan cemetery (DBS) represent one of the earlier groups of ancient people in this area, which has the potential to illuminate the prehistoric life ways and relationships of ancient peoples in East Asia. Yet, little attention has been given to this cemetery by way of archaeological research. In this study, the nature and health consequences of the interactions between populations in DBS were documented using multiple lines of bioarchaeological evidence to test longstanding assumptions about dietary dependency and violent conflict of DBS and even the south central region of Inner Mongolia. This study investigates the health condition of DBS by studying on dental disease, arthritis, fracture and trauma. The results show that the carbohydrates food was the main part of their food supply, while there was still a small number of meat in their diet, also the results indicate that the agricultural, which the ancient population from DBS had, probably arrived the mutual level. The results also show that the society of DBS was more harmonious than other sites in this region.

Wyatt, Andrew (Middle Tennessee State University)

[59] *Gardens of the Maya*

Houselot gardens are defined as cultivated spaces adjacent to households used to grow flowers, herbs, vegetables, and fruits. Gardens function as a primary source of many food items including staples, condiments, medicines, and spices; they provide many non-food items such as dyes, construction materials, or ornamentals; and also often provide food to sell in markets. Crops grown in houselot gardens encompass primary and secondary crops as well as those grown for both individual household use and income making them a fundamental element of household subsistence production and therefore play a central role in the political economy. Despite their crucial role, ancient Maya gardens have received little attention, and their position within the political economy needs to be explored. This presentation investigates the articulation of Maya gardening practices with the political economy, focusing on how political changes impact this element of household production. I will be presenting data on gardens from the ancient Maya site of Chan, exploring how practices were affected in a dynamic political landscape. These data will be compared with contemporary data from Lacandon Maya gardens at the site of Lake Mensabak and I will discuss the changing role of gardens from the Preclassic through the modern era.

Wyllie, Cherra

[264] *Changing Art? Changing Identity?: Visual Culture in Ancient Veracruz during the Late Classic-Early Postclassic Transition*

Group identity is visible in the archaeological record in the form of discrete burial practices, site planning, ceramic and artifact assemblages, settlement patterns, and architecture. Yet notions of ethnic identity are multi-layered and complex; the more so during periods of intense migration and social upheaval. The Late Classic to Early Postclassic transition was one such period, characterized by observable changes in practices and materials. In

Veracruz (at sites such as El Tajin, Las Higueras, and El Zapotal) researchers observe patterns of perceptible change, yet without major disruption. There is no consensus as to which players and processes precipitated these changes. Are they the result of shifting ideologies, economic patterns, power structures, populations, or some combination of factors? In this presentation I examine corresponding trends in the visual arts, exploring how color palette, canons of representation, the attributes and array of deities, depictions of costumes and headdresses, and graphic characteristics of hieroglyphic script contribute to our understanding of a changing regional identity.

Wynne-Jones, Stephanie [269] see Fenn, Thomas

Xhaufclair, Hermine (MNHN - McDonald Institute for Archaeological Research, University of Cambridge)

[295] *A Combination of Ethnoarchaeology, Experimental Archaeology and Use-Wear Analysis as a Mean to Recover Testimonies of Past Human Activities in Southeast Asian Rainforests*

In order to recover the activities that took place a long time ago in the rainforests, it is desirable to have an idea of the ones which can possibly be carried out in this specific environment with the resources available. Such knowledge can be acquired by conducting field investigation among forest experts: local populations who currently inhabit it and rely on plants, animals and minerals for their daily subsistence. To be able to identify these activities in the archaeological record, it is also desirable to know what material traces will remain of them, which can be achieved by archaeological experiments. We conducted ethnoarchaeological fieldwork among Palawan communities in the forested mountains of Palawan, Philippines to know what plants are used nowadays, to achieve what purposes, and following what technical processes. Then, we reproduced selected activities with stone tools made of local red jasper, which is the raw material of many archaeological stone tools in the region. Finally, we recorded the residues and use-wear present on the experimental tools, to document the specific signature of each plant and each activity, in order to be able to recognize them on archaeological artefacts.

Xia, Yin [173] see Li, Xiuzhen

Xie, Liye (University of Toronto)

[119] *Urban Construction as a Social Transformation Process*

Archaeological evidence and ancient Chinese text imply that the construction of early urban settlements in China were planned events initiated by rulers relocating their settlements in order to legitimize their arising power and establish hierarchical social systems. Accordingly, the construction of the urban settlements may have been the transformative social environments in which power was legitimized and enacted and new social structure was created. I hypothesize that whether this social-political practice succeeded was largely determined by how the rulers related themselves to their subjects. To test this hypothesis, I compare the ruler-commoner relationships during the urban construction process in the lower Yangzi basin and the central plains in China during late Longshan and Erlitou periods. In particular, I examine the labor management and implement procurement strategies as examples of the rulers' management skills and political strategies. I then examine how these strategies were related to the rise and collapse of complex social systems in these two regions.

Xiuhtecutli, Nezahualcoyotl (Tulane University) and Aurelio Lopez Corral (INAH Tlaxcala)

[179] *Plaza, Trade, and Politics in Postclassic Tlaxcallan*

Excavated lithic material from plazas at the Postclassic site of Tepeticpac, in the central Mexican state of Tlaxcala, suggests that obsidian production took place in these open spaces that may have served as marketplaces in the Late Postclassic polity of Tlaxcallan. Moreover, although green obsidian is present in Late Postclassic contexts, a decline in its presence is evident from earlier periods. In spite of ethnohistoric sources' claims that Tlaxcallan was cut off from trade by Tenochtitlan, these data suggest that green obsidian continued to trickle into Tlaxcallan. Given the political and economic role that the plaza played in ancient Mesoamerican cities and the unique position that green obsidian held as a commodity as well as a restricted item because of Tenochtitlan's control over the quarries allow an evaluation of Tlaxcallan's changing relations with its neighbors in the course of the Postclassic.

Yacobaccio, Hugo (Dr.)

[62] *Peopling of the High Andes of Northwestern Argentina*

The goal of this presentation is to review the current evidence in order to model the early peopling of the highlands of Northwestern Argentina. Paleoenvironmental evidence of the late Pleistocene and early Holocene is thoroughly reviewed in order to set the scenario of the process of human settlement at the Puna region of Argentina. I will analyze chronological evidence and the archaeological record—especially the archaeofaunas—of early hunter-gatherer occupations dated between 10,500 to the 9000 B.P. (12,500 to 10,000 cal. B.P.). Finally, I discuss specific cultural and environmental aspects related to the dispersion and human colonization of the Andean highland plateau.

Yacubic, Matthew (Bureau of Land Management)

[291] *Obsidian Artifacts and Community Interactions at Tayasal*

Lithic artifacts represent a major aspect of the archaeological record, and they are found in a wide variety of cultural settings. For the Maya Lowlands, lithic analysis is particularly insightful for studying relationships between economics and society because stone was the dominant raw material used to produce tools at differing levels of social organization. The purpose of this presentation is to examine community connections at Tayasal using an interactionist perspective. Through this approach, a better understanding of community activities can be gained through analysis of obsidian artifacts at the site.

Yaeger, Jason (University of Texas at San Antonio)

[137] *Discussant*

Yakal, Madeleine (University of California, Los Angeles) and Stephen Acabado (University of California, Los Angeles)

[262] *Elite Formation and Wet-Rice Access in the Northern Philippine Highlands*

Elite formation and development of cultural complexity in the Philippines have been considered to be a product of long-distance trade and interaction

beginning at ca. A.D. 1000. Proxy indicators for this political shift have been based on increasing centralization of pottery production and consumption. In the highlands, however, we see an alternative basis for elite formation; one based on access to wet rice and the ability to sponsor feasts. In this paper, we explore the development of social status and pottery production in Ifugao, as the Spanish pushed lowlanders to the Cordillera. Based on pottery analysis, zooarchaeological and archaeobotanical data sets, we argue that there is no relationship between pottery production and elite formation in Ifugao; instead, Ifugao elite status is associated with rice and rice terraces.

Yang, Dongya [38] see Brown, Kelly

Yann, Jessica

[193] *British Era Trade in the Midwest*

This paper investigates several common assumptions regarding the economic nature of trade interactions in the Midwest during the period from approximately 1760 to 1820. Using a resource dependency theory framework, this research analyzes archaeological and historical sources to demonstrate that these interactions were more nuanced, and more complex, than typically portrayed. It also demonstrates that these economic interactions were strongly intertwined with political decision making. Examining these interactions contextualizes the history of this region during this time, and allows for a better understanding of Native American and European dynamics.

Yansa, Catherine [90] see Fulton, Albert

Yant, Anna Catesby (Vanderbilt University)

[127] *A Comparative Analysis of Ritual Architecture in the Northern Maya Lowlands*

In the past as in the present, powerful people used the built environment to display and reinforce their power, so that structures play an important role in the development and maintenance of sociopolitical inequality. Iconography and material culture indicate that ancestor veneration played an important role in Maya society from the Formative period until the Post Classic period. Excavations over the last 15 years in the Ulum Plaza of Kiuic, a site in the Puuc hills, supports the importance of ritual space in the development of elite power. Our work demonstrates that, over time, the public spaces first associated with ancestor worship were gradually privatized and incorporated into an elite residential group. The ability of the elite residents to control access to the ritual space likely served as an important tool in their maintaining sociopolitical power. This paper will present a comparative analysis of elite ritual groups in the Northern Maya Lowlands, exploring the form of these groups, as well as how they evolved through time. Finally, it will discuss the link between the architectural forms of the ritual group and their role in the sociopolitical maintenance of power.

Yaquinto, Brian (Bureau of Land Management) and Sarah MacDonald (Bureau of Land Management)

[114] *Recent Advances in Fremont Archaeology of Northwest Colorado*

To date Gilbert Wenger's 1956 thesis remains one of the most comprehensive studies completed on Fremont culture within the Colorado Bureau of Land Management, White River Field Office (WRFO). WRFO archaeologists have focused Section 110 program efforts over the course of the last four field seasons on Fremont sites documented by Wenger and others and also to identify new Fremont sites through archaeological field survey. This poster presentation provides a synthesis of inventory results pertaining to Fremont settlement and land use in northwest Colorado.

Yates, Donna (Scottish Centre for Crime and Justice Research, University of Glasgow)

[33] *Discussant*

Yellen, John [13] see Brooks, Alison

Yellen, John (National Science Foundation) and Alison Brooks (George Washington University)

[22] *Crossing Deserts and Seas in the Late Pleistocene: Implications of the Aduma MSA Assemblages, Middle Awash, Ethiopia*

The ca. 3 km² Aduma region of the Middle Awash region, Ethiopia, incorporates a number of stratified sites within a matrix of sands and silts dating to between 180 ka and ca 80 ka. (Yellen et al 2005). With the exception of one possibly earlier site with late Acheulean bifaces (A-14, Clark et al 2003), all sites yielded diagnostic Middle Stone Age cores and most also contained typical retouched bifacial and unifacial points. In contrast to the earlier assemblages of Gademotta (Sahle et al 2012) point, core and flake sizes diminish through the sequence (Brooks et al 2005) to almost microlithic size ranges and suggest the development of composite projectile weaponry. The cores include Nubian and bifacial core-axe reduction strategies, which together with the points suggest wider interactions both with the Nile Valley and across the Red Sea.

This research was part of the Middle Awash Research Project under the overall direction of T. D. White, B. Asfaw, Y. Beyene and the late J.D. Clark. Funding was provided by the National Science Foundation, (Grant # 9521879).

Yepetz, Alden and Irmela Herzog (The Rhineland Commission for Archaeological Monuments)

[282] *De regreso al Valle de los Quijos (Ecuador): aproximaciones gráficas factoriales para interpretar la concentración de basura prehistórica como el momento de compactación sociopolítica de los cacicazgos*

Estudios neo-evolucionistas desarrollados en las últimas décadas, muchos inspirados en las investigaciones arqueológicas desarrolladas en el Valle de la Plata, Colombia, plantean como un elemento fundamental la identificación de unidades políticas cacicales a partir de la dispersión de material cultural en la superficie de las áreas prospectadas. Investigaciones recientes llevadas adelante por nosotros en el Valle de los ríos Cosanga y Quijos, en la Ceca de Montaña Oriental de los Andes Septentrionales (Ecuador), gracias a la base de datos que ofrece el "Centro de Arqueología Comparada" de la Universidad de Pittsburgh, e información propia, muestran la necesidad de incorporar algunos factores como la topografía del terreno y los desplazamientos humanos sobre ella y entender que sin esos factores, la basura prehistórica que se dispersa en el paisaje influye severamente en la manera cómo los arqueólogos

reconstruimos los patrones de asentamientos. En esta presentación el autor principal interpreta los gráficos de dispersión de basura prehistórica, que integran esos factores junto con una cronología relativa fina, como una herramienta más precisa para definir el momento de surgimiento de las unidades políticas caticales.

Yépez Álvarez, Willy [105] see Jennings, Justin

Yerka, Stephen [98] see Craib, Alexander

Yerka, Stephen (University of Tennessee), Jan Simek (University of Tennessee) and Alan Cressler (U.S. Geological Survey)

[131] *Through a Mirror, Darkly: Using Multi-Sensor Imaging Surveys as Basic Data for 3D Spatial Analysis of Cave and Open-Air Rock Art*

This paper explores and compares how quantitative spatial analysis of cave and open-air rock art can be derived from high-resolution, multi-sensor 3D digital reconstructions. For this project, three different types of survey data were collected at four prehistoric cave and rock art sites within the southern Cumberland Plateau of eastern North America.

The project survey methods include close-range photogrammetry, high-density laser scanning, and near-infrared (NIR) multispectral imagery. The case studies are used to compare the overall efficiency of different survey methods for mapping rock art spatial organization and production techniques. For example, while high-density laser scanning allows for rapid collection of data over large areas, high-resolution photogrammetry allows for greater precision in detecting and enhancing engraved or incised petroglyphs and mud glyphs. When possible, multiple data sets are fused to produce multi-sensor 3D objects that can be investigated using a variety of GIS, 3D, and computer-aided drafting (CAD) software tools.

Spatial patterns in the distribution and form of rock art glyphs and panels can reveal culturally linked concepts within a traditional knowledge system. Project results are interpreted based on relationships between spatial patterns, traditional knowledge, ethnohistory, and structural attributes.

Yesner, David (University of Alaska Anchorage)

[21] *Human and Animal Dispersal in Beringia: Reconciling the Genetic and Archaeological Records*

Peopling of the New World involved a dispersal process across Beringia that included both humans and animals. The archaeological record from eastern Beringia suggests a multiple-stage process of both pre- and post-Younger Dryas (YD) colonization from different regions of northeast Asia, with the pre-YD colonization subdivisible into multiple waves. These archaeological manifestations can in turn be related to waves of terminal Pleistocene opportunistic entry into NE Asia itself, but can only be distantly related to linguistic and genetic groupings in Northeast and East-central Asia today (with Y-chromosome data providing the most consistent patterning). However, animal resources hunted by early human colonists, particularly megafauna such as mammoth, bison, wapiti, caribou, and moose also show dispersal patterns in the terminal Pleistocene and early Holocene that can be traced genetically and related to dispersal patterns of early humans in Beringia, revealing complex associations as well as important environmental and demographic correlates. The latter include genetic bottlenecks which may be related to regional extinction patterns as human populations expanded into the region during the terminal Pleistocene/early Holocene Period.

[242] *Discussant*

Yoakam, Stacia (The Ohio State University) and Kathryn Marklein (The Ohio State University)

[147] *Once Upon a Höyük*

Oymaağaç Höyük, the putative Hittite religious center of Nerik, was occupied as early as the second millennium B.C.E. Nearly 3,000 years later, the site was reclaimed as a burial ground for the local populace. Within the upper stratigraphic, tile (tegula) graves and the associated burials, relatively and radiocarbon dated to the Byzantine (i.e., Late Roman) period (A.D. 250–450), provide an informative look into the lives of the rural population. Employing archaeological context in conjunction with human osteological data, this study aims to enhance our understanding of this understudied region and time period. Data presented in this study represent nine Byzantine graves and individuals. Consistencies in burial orientation and placement were observed between all individuals, regardless of age or sex, alluding to the living population's awareness and adherence to local burial traditions. Initial analyses of human skeletal remains reveal high frequencies of osteoarthritis throughout the body, notably among thoracic and lumbar vertebrae. Although this sample size is too small for statistical significance, similarities in burial and physiological stress between male and female adults (ages 25–50) suggest high daily labor for both sexes within this population, indicating comparable workloads and responsibilities between genders in this Northern Turkish community.

Yoder, David (Utah Valley University)

[104] *Fremont Figurines: In Which We Go from Culture History to Processualism to Post Processual*

Anyone interested in the 'Fremont' knows of Fremont figurines; small figures that range from exquisitely crafted works of art to cruddy little lumps of clay with eyes. Despite years of interest, archaeologists still know relatively little about this phenomenon. But fear not intrepid Fremont enthusiast! After examining nearly every Fremont figurine described in the literature, hidden in museum basements, and even a few from super-secret private collections, I have ALL the answers! Come learn how a study of over 600 figurines from more than 100 different sites can inform us about geographic and temporal distribution, styles, context of disposal, who made the figurines and why, Fremont dress and ornamentation, ideals of personhood, participation and recreation of cultural systems, and connections between the Fremont and Greater Southwest (all in under 15 minutes...).

Yoffee, Norman (U Michigan)

[138] *Perspectives on Water Management Systems in Mesopotamia*

Over the years, Vern Scarborough has considered how water management systems have been created, altered, and in some cases abandoned, especially in response to the evolution of political systems. For a Mesopotamianist, Vern's work obviously resonates with that of Robert McC. Adams. In this paper I review some of the lasting contributions of Adams to the study of water management systems in Mesopotamia. I review especially a series of essays that Adams wrote after his retirement from the Smithsonian.

[59] *Discussant*

Yonenobu, Hitoshi [173] see Takamiya, Hiroto

Yong, Jameson (University of Illinois at Urbana-Champaign)**[196]** *I Am a Rock: A Comparison of Lithic Art and Artifacts from the Inca and Ychsma Cultures*

After the finding of many different shaped and worked carved stones from Panquilma's excavations, in this paper, I compare the lithic artwork and artifacts from both the Ychsma and Inca cultures and I noticed many different types of Inca stone art and artifacts, by comparison with these. The stones that were carved in a particular shape from Panquilma can be related to either the Inca or the Ychsma. In this presentation, I explore the significance of the carved stones in order to understand the possible meaning of their use in the structure where were found. The study of these artifacts could give us a broad understanding of the lithic tools of both the Ychsma and Inca cultures in the site.

Yoshida, Yasuyuki (Center for Cultural Resource Studies, Kanazawa University)**[173]** *The Prehistoric Jomon and Ideological Conflict in Contemporary Japan*

This paper aims to suggest an alternative perspective to understand the "Jomon" in contemporary Japan within the context of public archaeology, paying attention to the contact zone between archaeology and the public. Contemporary Japanese society includes an ideological conflict with regard to an international cooperation with East Asian countries, a nuclear plant politics, and a modern history education under the situation of the post-cold war equilibrium and globalization. The conflict is not one between the old-school and organized left wing movement based on Marxism and the conservative right wing regime, but among the naturally-rising discursive social movements, the group of haters of liberalism and the one of cautioners to the danger of return to totalitarianism during the war. Although the "Jomon period" archaeologically references a long-term period (approximately 16000 B.P. to 3000/2500 B.P.) that begins with the emergence of pottery up to the introduction of rice paddy agricultural system from Korean peninsula, the "Jomon" has multiple meanings between the publics in Japan apart from the strict archaeological definition. This paper will describe how archaeological discoveries related to the "Jomon" are enhancing of rivalry of social movements as important actors.

Young, J. Ryan [8] see Meer, Kelsey

Young, Tatiana (Temple University)**[88]** *Terminal Classic Maya Political Organization from the Perspective of a Secondary Site Cochuah Region, Quintana Roo*

This paper focuses on characteristics of a secondary center and its satellite settlements to provide evidence for the nature of political organization in the Cochuah Region during the Terminal Classic Period. The examination of these settlements gives insight into the political organization of a secondary center which otherwise would not be available if investigation was limited to the primary centers. The data used for investigation of the nature of political organization during this time are the regional settlement pattern, individual site layouts and site architecture. The goal is to use the presence and distribution of elements of rulership reflected in the architecture within sites of this region to determine the political organization. The examination of political organization from the perspective of a secondary site represents an alternate but complementary approach to the existing study of Maya political organization.

Young, Ruth**[221]** *Finding and 'Heritagizing' Women in the Landlord Villages of Iran*

The landlord villages of Iran were owned by a powerful, usually absentee landlord, who had near-total control over the political, economic and social lives of all those living within them. A range of sources describe the male occupants of the villages, and when reading historical and anthropological studies of landlord villages, it would be easy to think they were occupied by an amorphous mass of (male) peasants living in extreme poverty, who were subject entirely to the will of the (male) landlord. Women within the village were either those in farming families who were briefly mentioned in terms of their economic and family roles in connection with the male farmers; or the wives and daughters of landlords, who are scarcely mentioned. Within our historical archaeology project we wanted to restore women to these villages, through analysis of village material culture informed by new ethnographic work, and to explore relations between different classes of women and how these class identities were articulated through material culture. We now face challenges around how to present these remains of recent, unpalatable history as heritage, and also how to tell the stories of the women who lived here, or were part of landlord families.

Young, Stacey (TRC Columbia, SC), Brooke Brilliant (Archaeological Consultants of the Carolinas, Inc.) and David Jones (South Carolina State Parks)**[293]** *Hampton Comes Alive! An Examination of Colonoware from Hampton Plantation*

Recent excavations at Hampton Plantation State Historic Site, located in Charleston County, South Carolina, have yielded colonoware from an early eighteenth century occupation and a late eighteenth to nineteenth century occupation. The later occupation is associated with the Horry family, who developed Hampton Plantation. A large assemblage of colonoware associated with this late eighteenth to nineteenth century context has been recovered from the living and work areas of enslaved workers and indications of possible on-site colonoware production are present. The early eighteenth century, pre-Horry, assemblage also includes a large portion of low-fired earthenware pottery. This colonoware is likely associated with local Native American groups, such as Sewee Indians, and/or early European settlers and their enslaved workers. This paper will examine evidence of colonoware production, the evolution of low-fired earthenware pottery at the site, and interactions between various groups in the area. This research has the potential to provide information on the factors influencing the production and distribution of colonoware, the role colonoware played in the daily lives of the residents of the site, and how occupants of the site interacted with other groups through the formation of various trading networks.

Yu, Pei-Lin (Boise State University), Robert Kelly (Univ of Wyoming), Craig Lee (Univ of Colorado Boulder), Ira Matt (Confederated Salish and Kootenai Tribes) and John Murray (Blackfeet Nation)**[191]** *Climate Change, Archaeology, and Native Expertise: an Ice Patch Success Story*

Managing the impacts of climate change to cultural resources, and conducting relevant research, cross-cuts disciplinary boundaries and calls for an innovative, outward looking mindset. Descendant communities, particularly Native groups with long ties to lands and resources and high stakes in climate change outcomes, are rich in traditional ecological knowledge and cultural expertise. These bodies of knowledge are key building blocks for successful strategies for risk evaluation, vulnerability assessment, minimizing or mitigating impacts, and research design. The Glacier Ice Patch Archaeology Project team has developed a culturally informed, scientifically rigorous protocol for ice patch discoveries. This paper highlights the protocol's elements and accomplishments to provide a useful template for other efforts.

Zachrisson, Torun [192] see Hedenstierna-Jonson, Charlotte

Zahid, H. Jabran [55] see Robinson, Erick

Zaleski, Sarah (University of Florida) and Nicholas Herrmann (Mississippi State Univ., Texas State Univ.)

[7] *Differentiating Burial Contexts at Russell Cave, Alabama: pXRF and Dental Analyses*

The 1956-8 National Geographic funded and Smithsonian sponsored excavations within Russell Cave and the nearby stone mound uncovered six cave and twelve mound burials, respectively. During the 2011 osteological inventory, two burials comprised of maxillary and mandibular fragments were found labeled "A" and "B" with neither cave nor mound context identification. This study employs elemental analysis of soil associated with individual burials as well as dental comparisons to identify the contexts of Burials A and B. Portable x-ray fluorescence (pXRF) was used to analyze relative element concentrations in soil samples from four cave burials, four mound burials, and Burials A and B. A discriminant function based on the relative amount of Strontium classifies A and B as mound burials. The discriminant function has a canonical correlation value of 0.983 and accounts for 96.6 percent of between-group variability. The cross validated classification shows that 100 percent of cave and mound cases are correctly classified with the discriminant function. In addition to the pXRF analysis, dental data from the mound and cave samples are compared. The identification of Burials A and B as mound burials improves further osteological analysis of the samples from Russell Cave and the nearby stone mound.

Zambrano, Raúl [233] see Capriata Estrada, Camila

Zanotto, Hannah (Northern Arizona University) and Jaime Awe (Northern Arizona University)

[241] *Tlaloc Imagery in Western Belize and its Implications for Central Mexican and Lowland Maya Interaction*

Recent archaeological investigations in western Belize have recovered evidence for the representation of Tlaloc imagery in the iconographic record of this sub-region of the Maya lowlands. In Central Mexican Civilizations, Tlaloc represented the important rain deity, equivalent, in many ways, to Cha'ac in the Maya area. In the case of western Belize, Tlaloc imagery appears to become increasingly popular at the end of the Classic period, and is depicted on a variety of mediums, including stucco decorations, stone monuments, and ceramic vessels. Besides discussing the nature of Tlaloc imagery in western Belize, this paper will provide information on the contexts of the imagery, and explore their implications for Central Mexican and Lowland Maya interaction at the end of the Late Classic period.

Zaragoza, Diana (INAH)

[216] *LA HUASTECA. PROBLEMÁTICA DE INVESTIGACIÓN.*

A través del tiempo, la Huasteca ha sido objeto de considerables estudios arqueológicos que han aportado información diversa; esto nos ha llevado a tener una idea general del desarrollo de las diversas culturas que ahí se establecieron en época prehispánica. Sin embargo, esto no explica plenamente la situación que imperaba en la región. Dadas las generalizaciones hechas con los datos obtenidos, cada vez se hace más difícil comprender la evolución de los pueblos que ahí se asentaron; siendo la falta de fechamientos uno de los problemas más graves a los que nos hemos enfrentado.

La carencia de documentos de primera mano, escritos por los primeros españoles acerca de las costumbres de los pueblos establecidos en la región, dificulta el conocimiento de estas y aun cuando no pueden extrapolarse en el tiempo por lo menos conoceríamos algo más acerca de los pueblos asentados en la región durante las primeras décadas del siglo XVI.

En esta presentación haré una síntesis de lo que conocemos de la Huasteca con el fin de mostrar un panorama que pueda servir de partida y mediante la discusión tratar de llegar a sugerencias acerca de lo que fue la Huasteca y proponer futuras líneas de investigación.

Zaro, Gregory (University of Maine), Martina Celhar (University of Zadar), Dario Vujevic (University of Zadar) and Kenneth C. Nystrom (State University of New York at New Paltz)

[189] *Nadin-Gradina and the Process of Urbanization in the Eastern Adriatic*

In the eastern Adriatic, the process of urbanization unfolded over the course of several thousand years, resulting in significant changes in landscape, environment, and human societal organization. With support from the National Geographic Society, our joint Croatian-American team recently engaged in a collaborative effort to evaluate urban change surrounding the archaeological site of Nadin-Gradina, a moderately-sized center located near the coastal city of Zadar along Croatia's Adriatic coast. The overarching goal of the project was to lay the foundation for a long-term study concerning the links between urbanization, climate, and environment over the past three thousand years. Nadin-Gradina reflects a long, though intermittent, occupational history, stretching from at least the first millennium BCE into the 17th century CE. In 2015, our inaugural excavations were designed to delineate depth of deposits, chronology, and integrity of the archaeological record. In this paper, we discuss our results and characterize what appears to be the most significant physical transformation of the urban center—the transition from Iron Age settlement to Roman governance of Dalmatia. We also discuss the potential impacts of urbanization on human diet and mobility through stable isotopic analyses and the potential of such studies moving forward.

Zavodny, Emily (Penn State University), Brendan J. Culleton (Penn State University), Sarah B. McClure (Penn State University), Douglas J. Kennett (Penn State University) and Jacqueline Balen (Archaeological Museum in Zagreb)

[146] *The Iapodians in Iron Age Europe: a Stable Isotope and Radiocarbon Dating Program in Northern Croatia*

In this paper, we report results from ongoing research on the Iapodian culture, a distinct group centered in the Lika region of modern-day Croatia. Despite excavations in the area since the late 1880s, the scope of Iapodian involvement in regional interaction spheres, larger trade networks, and the general Iron Age world is unclear, and has yet to be systematically analyzed with modern methods. Preliminary isotopic results from Iapodian samples demonstrate an increase in millet consumption, unusual for this time period in other parts of Europe, and a decline in overall dietary quality over time. Using new radiocarbon dates and stable isotope analyses, we seek to understand the role of millet in Iapodian subsistence and the timing of its appearance in archaeological contexts alongside other changes in material culture. We conclude with a consideration of where and how millet may have traveled to Lika, and what implications this may have for characterizing contact, trade, and exchange between the Iapodians and their neighbors.

Zawiskie, John [218] see Panyushkina, Irina

Zborover, Danny (Brown University)**[135]** *To Move Mountains: Cycles of Indigenous Mobility and Resettlement in Highland Mexico*

The quaint and seemingly static Oaxacan Chontal villages, tucked away in the highlands of southern Mexico, conceal behind a long history of population movements and resettlement. For the last five centuries and more, entire communities migrated and changed places as an adaptive response to intricate ecological, economic, political, and social factors. While the dispersed settlement pattern largely 'fused' together in the 16th century colonial congregations, many other communities went through a poorly understood process of fission that created new sociopolitical entities. As such, nearly every indigenous community in the region today can trace their ancestral origins to a respective 'pueblo viejo'—literally 'old village'—an archaeological site sometimes several miles away from the current location. This presentation will focus on the Chontal community of San Miguel Ecatepec and its environs, where a new interdisciplinary project brings together archaeological, linguistic, historical, ethnographic, and geographical evidence to reconstruct its surprising mobility through space and time. In particular, we argue that in order to fully understand the dynamics of past and present communal mobilities, we must consider regional geopolitics and associated interaction corridors on a broader regional scale.

[135] *Chair***Zeanah, David (California State University, Sacramento), Robert Elston (University of Nevada, Reno), Adolfo Gil (Museo de Historia Natural de San Rafael), Gustavo Neme (Museo de Historia Natural de San Rafael) and Amber Johnson (Truman State University)****[94]** *Human Response to Environmental Change during the Early/Mid Holocene in the Great Basin: Frame of Reference in Comparative Perspective*

At the transition from Early to Middle Holocene, the Great Basin witnessed higher effective temperatures and reduced aquatic resource zones. Intensified use of terrestrial plants, reflected by the Middle Holocene appearance of milling equipment, is an archaeological signature of the transition, but the relative importance of terrestrial fauna and aquatic resources under either climatic regime remains unclear. Here we use Binford's environmental frames of reference to model regional Early and Middle Holocene subsistence based on variability among recent hunter-gatherers. We compare results with the Argentinian Mendoza region and theoretical models based on human behavioral ecology to develop future research directions.

Zeanah, David [94] see Gil, Adolfo

Zedeño, Maria (University of Arizona)**[62]** *Bison Hunters and the Rockies: An Evolving Ontology*

Euroamericans who encountered northern Plains bison hunters in the late 19th century believed that the Blackfoot held the Rocky Mountains in awe and fear, preferring to remain on the plains even as bison and elk herds dwindled. This incorrect assumption has hampered our ability to understand deep-time relationships between mountain and plains cultural expressions. Although the historic Blackfoot did not dwell in high elevations, the character of their relationship with the Rocky Mountain Front began in "time immemorial" with the creation of the world, the establishment of social mores, and the group's ethnogenesis. Historical ethnology furnishes rich detail on the depth and significance of relationships among people, mountains, and other-than human persons, not the least of which is the Blackfoot's partnership with bison. Archaeology tells of an ancient partnership that the ancestors established with mountain persons, which in turn explains their intimate familiarity with elevated environments; as the ice retreated, the ancestors folded this new landscape into their worldviews and practices. This paper tracks the dynamics of this partnership to provide a cultural context for deriving connections and uncovering contrasts among the people who populated America's backbone.

[248] *Discussant***Zegarra, Edward (Binghamton University)****[254]** *Partnerships for Patrimony: A Community-based Approach to Sustainable Archaeological Protection*

This paper will discuss preliminary research related to the complex, contemporary archaeological identities built around the site of Huari, capital of the first Andean Empire, where archaeological remains are of national value and yet contemporary native identities retain a negative connotation in the national imaginary.

The project applies an ethnographic method referred to as 'community-based participatory research' (Sonya Atalay 2012), which has an initial goal of revealing local campesino relationships to and personal identities with the site in order to introduce a framework for the long-term protection of Huari via the crafting of State and local co-management strategies. Central to this applied-anthropological objective is investigating Pre-Hispanic cultural-continuity and to reveal total life histories of the adjacent community of Pacaycasa.

Collaborative and Community Archaeology have made great strides to address issues of indigenous representation at archaeological sites in the recent past, and the discipline of archaeology has generally begun to adopt research methods that integrate native populations at every stage of research.

However, multi-scalar ethnographic investigations have not yet been fully adopted by most community-based approaches prior to initiating collaboration, for which it is the purpose of this project to demonstrate their importance to the successful decolonization of our discipline.

Zeidler, James (Colorado State University)**[178]** *Configuring Space in a Valdivia Town: Social Precepts, Cosmological Mandates, and Emergent Hierarchy in Early Formative Ecuador*

This paper revisits interpretations of the built environment at the Early Formative Valdivia town site of Real Alto in coastal Guayas province, Ecuador, from the broader comparative perspective of contemporary Formative Period sites throughout the Americas. Special emphasis is placed on the Middle Valdivia town configuration encompassing individual households, residential neighborhoods, open plazas, and central ceremonial space, but consideration is also given to Late Valdivia transformations both at Real Alto and at other sites in the coastal Ecuadorian lowlands. These nested spatial scales are briefly examined in terms of likely social and cosmological principles for organizing space and time in the Valdivia community and from which emergent social complexity appeared. Finally, these social transformations in Valdivia culture are examined through the lens of Isbell's (2000) re-conceptualized imaginary communities following the work of Anderson (1986, 2006) and the concept is then explored for cross-cultural analyses of Formative Period settlements in the Americas more generally.

Zena, Ashenafi [269] see Duff, Andrew

Zender, Marc [212] see Card, Jeb

Zender, Marc (Tulane University), Jaime Awe (Northern Arizona University) and Simon Martin (University of Pennsylvania Museum)

[256] *The "Snake" Kingdom from the Vantage of Western Belize*

Recent years have seen the evidence from Western Belizean sites—especially Buenavista, Cahal Pech, Caracol, Cuychen, and Xunantunich—beginning to contribute substantially to scholarly understandings of the hegemonic networks underlying Classic Maya politics. Particularly illuminating are a series of seventh-century monuments commissioned by Caracol's king K'an II, which chronicle his polity's shifting fortunes as a client kingdom. While his own father was placed on the throne of Caracol by Wak Chan K'awiil of Tikal in 553 C.E., K'an II reports the dissolution of that relationship in the wake of the Snake kingdom's military defeat of Tikal in 562, as well as his own accession under the supervision of the Snake king Yuhknoom Ti' Chan in 619. Two kings of nearby Naranjo were also placed on their thrones by Snake kings, in 546 and again in 693. Recent discoveries at Buenavista reveal it to have been the victim of warfare in 696 and 726 at the hands of the second of these Snake kingdom clients: K'ahk' Tiliw Chan Chahk. These discoveries join earlier evidence suggesting an invasively hegemonic Snake kingdom presence in the Eastern Petén and Western Belize during much of the sixth through eighth centuries.

Zenobi, Lauryl [252] see Lape, Peter

Zhang, Quanchao [180] see Zhang, Qun

Zhang, Qun (Department of archaeology, Jilin University), Quanchao Zhang (Department of archaeology, Jilin University), Xiaofang Gao (Department of archaeology, Jilin University), Tao Han (Department of archaeology, Jilin University) and Hong Zhu (Department of archaeology, Jilin University)

[180] *Cultural Exchanges Along the Ancient Silk Road—A Case of Cranial Trepanation from the Early Iron Age in Xinjiang, China*

This presentation reports a case of intentional trepanation along the ancient Silk Road in China from the Early Iron Age, with clear evidence of it being carried out by humans. Although trepanation has been widely performed in Eurasia, there are no definitive trepanation discoveries in western China dating from the Bronze Age. Microscopic observation and computed tomography scan were used to analyze the area of trepanation. With the observation of a three-dimensional deep-field microscope, the ridge of the opening was smooth and rounded in some parts. On the right section, new bone formation with a polyporous surface was observed, which showed previous osteoclast activity on the cut section under higher magnification. The CT scan imaging analysis confirmed the characteristic smooth, new growth of the bone on the edge of the lesion. No low-density diploë was exposed at the edges of the bone around the opening, most likely due to the process of osteogenesis and the growth of new bone tissue. Based on the analysis of the cultural background along the ancient Silk Road, the tradition of trepanation in Xinjiang may be related to a custom brought from Europe or western Asia.

Zhao, Yichao [10] see Wei, Qiaowei

Zhou, Jing [106] see Flad, Rowan

Zhu, Hong [180] see Wu, Xiangqun

Zhuang, Yijie [262] see Carter, Alison

Ziegler, Joshua [274] see Jenkins, Dennis

Ziel, Deborah

[213] *Which Way to the Jook Joint?: Historical Archaeology of a Polk County, Florida Turpentine Camp*

The turpentine industry employed African American labor in the southeastern United States under a system of debt peonage that was similar to antebellum slavery. One such company camp, Nalaka, located in Polk County, Florida was in operation between 1919 and 1928. The circumstance of its abandonment is unknown. Although no structures survive, artifact scatters from 1920s Nalaka remain in situ. Despite the oppression of peonage, African American laborers developed venues known as "jook joints" for the expression of agency through leisure. This study reconstructs the layout of Nalaka based upon artifact provenience (documented with GPS and ArcGIS technology,) secondary ethnographic sources, and historical records to determine whether or not the camp supported a jook joint, and if so, where was its likely location.

Ziesemer, Kirsten (Leiden University), Menno L.P. Hoogland (Leiden University), Corinne L. Hofman (Leiden University), Christina Warinner (University of Oklahoma) and Hannes Schroeder (Center for Geogenetics, University of Copenhagen)

[160] *Challenging Environments: Ancient DNA Research in the Circum-Caribbean*

Ancient DNA (aDNA) studies have had a major impact in archaeology. However, until now most aDNA studies have been conducted on samples from cold or temperate environments, as DNA degrades more rapidly at higher temperatures. With average annual temperatures of over 25°C, the Caribbean represents a particularly challenging environment for aDNA research and very few aDNA studies have been conducted in the Caribbean to date. Yet, there are many questions in Caribbean archaeology that could be addressed using aDNA, and previous studies have shown that DNA does preserve in the Caribbean context, in some cases possibly up to several thousand years. However, the factors influencing DNA preservation in this challenging environment are as yet not well understood. In this paper, we systematically explore the effects of temperature, age, microbial action, time since excavation, sample and soil type, and burial setting on DNA preservation in the Caribbean, using low-coverage, high-throughput DNA sequencing of human and canine samples from over 20 different sites in across the Caribbean. This study demonstrates the importance of burial context and sample type

in the selection of successful samples with a higher likelihood of amplifiable DNA, especially in these challenging environments.

Zimmerman, Andrew [134] see Eusebio, Michelle

Zimmermann, Mario (Washington State University), Jade D'Alpoim Guedes (Washington State University) and Mark Altenderfer (UC Merced)

[19] *Identification of Bast Fibers from Samdzong, Nepal*

Textile remains have been recovered from burials at the highland site of Samdzong, northwestern Nepal. The fabrics are desiccated exhibiting and high degree of preservation which is shown by the presence of cellular tissue pertaining to bast bundles. In this paper, we discuss methodological approaches towards the study of plant fibers and their surrounding tissues focusing on different techniques of microscopy. We will address advantages and limitations for transmitted and polarized light, as well as SEM and confocal microscopy. Finally, we will present an identification key based on diagnostic features for different types of bast fibers.

Zinsious, Brandon (University of Louisville) and Jonathan Haws (Graduate Advisor)

[146] *Photogrammetry at Lapa de Picareiro: 3D Modeling of a Middle and Upper Paleolithic Cave Site*

Archaeology as a practice is destructive thus once a site is excavated it is gone forever. Accurate and precise recording of spatial data is critical to preserving information. Higher resolution data collection may lead to better spatial analysis of the site. This endeavor improves with the continuing development of technology and methods of recording spatial data. Photogrammetry is a technology that has allowed researchers to accurately record spatial data on excavation, stratigraphy, features, clast layers, and soil removal. It also allows for the site and its components to be placed more accurately in space. This poster presents photogrammetric work done on Middle and Upper Paleolithic deposits at Lapa De Picareiro, a cave site in Portugal. Images were taken with a Nikon D3100 SLR Camera and manipulated in Agisoft to create three dimensional models of specific areas of the site at different stages of excavation.

Zipkin, Andrew [13] see Brooks, Alison

Zipkin, Andrew (University of Illinois at Urbana-Champaign)

[13] *Discussant*

[13] *Chair*

Zlatanovski, Diana [265] see Costello, Laura

Zobler, Kari (University of Illinois, Urbana-Champaign)

[118] *Chimú Conquest and Administration at Talambo, Jequetepeque, Perú*

There are few communities in the Andes untouched by the legacies of empire. On the North Coast of Peru, the Chimú (900—1470 A.D.) formed the most extensive empire in the region prior to Inca conquest. Significant archaeological and ethnohistoric evidence from the Jequetepeque Valley—the first region to be incorporated by the Chimú—has illustrated the nature of this conquest and the varying impacts on local communities. The site of Talambo, located in the lower neck of the Jequetepeque Valley, has long been identified as a Chimú administrative center (Keatinge and Conrad 1983), yet little is known about the nature of Chimú conquest at the site or the impact of Chimú administration on the previously autonomous community. This paper presents the results of recent archaeological excavation of the Chimú Period at Talambo.

Zöega, Guðný [24] see Murphy, Kimmarie

Zori, Davide (Baylor University)

[161] *Advances in Viking Archaeology: Aligning Data, Theory, and the Interdisciplinary Perspective*

Viking Archaeology, conceived of here as a particularly influential subfield of medieval archaeology, originated in antiquarian efforts of early Scandinavian scholars who helped to shape the identities of their nation states. From C.J. Thomson, to Jens Worsae, and Oscar Montelius, these early Scandinavian archaeologists were formative in the establishment of a periodization of the past, development of dating techniques, and the professionalization of archaeology as a discipline. The Viking Age continues to play a disproportionate role in the national narratives of the Scandinavian countries. Academic projects on the Viking Age are still the most common and best funded of archaeological ventures in Scandinavia. Rather than lament this perceived prejudice, I argue that public and scholarly interest in Vikings has meant that Viking Archaeology—as separate from textually-dominated Viking history—has been vital in advancing our understanding of the period of the Middle Ages that we still call the Viking Age. Archaeologists studying the Viking Age, looking for non-textual frameworks, have also been at the forefront of theoretical and scientific advances in archaeology. I conclude by suggesting that Scandinavian (and Viking Age) archaeology continues to offer a harbinger of things to come in the wider field of medieval archaeology.

Zoubek, Thomas (King School, Stamford Connecticut)

[31] *Initial Period Irrigation-based Societies in the Viru Valley, Peru*

Radiocarbon dates from the sites of V-198 and Huaca El Gallo/La Gallina in the Viru Valley of Peru illustrate that the transition inland from the coast and the construction of monumental corporate architecture based on irrigation agriculture was not unique to the Supe Valle area along the Andean coastline. A second instance has been identified in Viru where it is also associated with the use of ceramics as early as 3,950 years before present (2450 calibrated years B.C.). This pushes back the introduction of ceramics in Peru some 600 years and conflicts with the Maritime Foundation for Civilization Hypothesis. Patterns of intervisibility among sites suggest a complex valley-wide water management system evolved with the development of irrigation agriculture as the population dispersed down valley.

Zovar, Jennifer (Whatcom Community College)**[40]** *Trash, Histories, and Community Engagement: Integrating Service Learning into the Archaeology Curriculum*

As educators teaching archaeology at the introductory level, it can be challenging to develop hands-on exercises that allow students to discover how archaeological knowledge is generated, especially when teaching at institutions without large labs or active field projects. Another major challenge is helping students to understand the relevance of archaeological research in the modern world. One way to achieve both goals may be to bring the archaeological classroom into the community, as students engage in community service projects that draw on their archaeological training in recording and analyzing material culture. For example, students could conduct a "garbage project" at a local park or historic area, curate artifacts for a veteran's group or retirement home, work with Native communities on archaeological outreach, help to clean up and/or record data from a historic cemetery, etc. This poster reports the results of a pilot project designed to make connections with potential community partners and describes the integration of the resulting student studies into an Introduction to Archaeology classroom. Projects like this one teach students that archaeology is not simply an academic exercise, but a project through which we can substantially contribute to our communities and the world at large.

Zurro, Debora (CaSEs. Dept Archaeology & Anthropology. IMF-CSIC)**[125]** *Chair*

Zyaradi, Zsolt [24] see Bethard, Jonathan