

SOCIETY FOR AMERICAN ARCHAEOLOGY

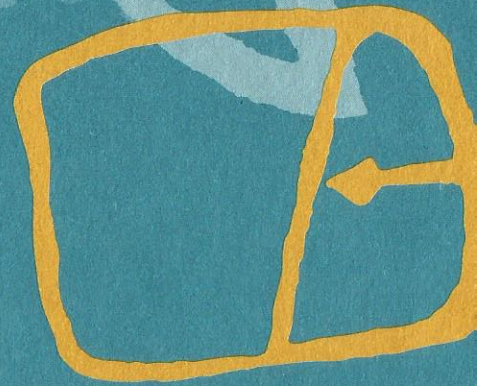
Abstracts of the 60th Annual Meeting



Minneapolis Hilton and Towers

May 3-7, 1995

Minneapolis, Minnesota



SAA
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Abstracts of the 60th Annual Meeting

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SOCIETY FOR AMERICAN ARCHAEOLOGY
60th Annual Meeting

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SYMPOSIUM, FORUM, AND WORKSHOP ABSTRACTS

[1] Workshop ■ **GIS in Archaeology**

This workshop, offered by the University of Nevada-Reno, will focus on basic principles and practical applications of Geographic Information Systems (GIS) for use in archaeological research and management. Instructor: W. Frederick Limp, director of the Center for Advanced Spatial Technology at the University of Arkansas.

[2] Workshop ■ **Advances in Methods and Techniques for Archaeological Site Discovery**

In order to be protected, preserved, and managed effectively, archaeological sites must be identified and their condition and significance evaluated. Advances in methods, techniques, and approaches to site discovery and site evaluations occur regularly. In order to increase the rate at which improvements in these technical areas are applied in the field, this professional training is being offered. This workshop was developed with funds provided through the National Center for Preservation Technology and Training, an interdisciplinary effort of the National Park Service.

[3] Workshop ■ **The Role of Geology in Cultural Resource Management**

The role of geology in Cultural Resource Management (CRM) from the perspectives of both archaeology and geology will be explored. Presentations and discussions involving workshop participants will cover the rationale for incorporating geology, timing and integration of geologic studies in relation to investigative phases, and the balancing of research with fiscal and temporal constraints in CRM investigations. Case studies presented through video and verbal formats will illustrate applications of geologic studies in survey, testing, and mitigation phases of several CRM projects.

[4] Workshop ■ **Advances in Methods and Techniques for Archaeological Site Evaluation**

In order to be protected, preserved, and managed effectively, archaeological sites must be identified and their condition and significance evaluated. Advances in methods, techniques, and approaches to site discovery and site evaluations occur regularly. In order to increase the rate at which improvements in these technical areas are applied in the field, this professional training is being offered. This workshop was developed with funds provided through the National Center for Preservation Technology and Training, an interdisciplinary effort of the National Park Service.

[5] Workshop ■ **GIS for Personal Computers: A Hands-On Workshop**

This day-long workshop will introduce the fundamental concepts of Geographic Information Systems (GIS) technology and overview a number of key applications areas in archaeology. This is accomplished through actual hands-on database development, manipulation, and analysis of real archaeological data sets using a popular and easy-to-learn PC GIS package known as IDRISI. Together with hand-outs, bibliographies, and presentations, the attendee will come away with a thorough grounding and experience in this new and important technology.

[6] Workshop ■ **Rock Magnetism**

This workshop will be offered at the Institute for Rock Magnetism at the University of Minnesota (127 Shepherd Labs Building, 100 Union Street SE, Minneapolis) for archaeologists interested in applying environmental magnetic techniques in their research. It will include an introduction to rock magnetism, a discussion of the archaeological potential of these techniques, and a laboratory introduction to magnetic equipment and measurements.

[7] Workshop ■ **The Health and Safety of Archaeology or What You Don't Know Can Hurt You**

DANGER!! Although the danger that archaeologists encounter was grossly exaggerated in the Indiana Jones movies, it does exist. Are you aware of potential occupational hazards? How many archaeologists receive training in safety procedures or regulations? Archaeological field and laboratory activities can result in the spread of diseases, exposure to toxic materials, or bodily injury. Some well established archaeological field practices may be in violation of federal Occupational Safety and Health Administration (OSHA) standards. This workshop overviews how to identify and prevent several health and safety problems in archaeology.

[8] ■ **Opening Session**

Representatives of Minnesota's archaeological and Native American communities will address the audience after a welcome from SAA President Bruce Smith and a dedicatory drumming, followed by a talk by the University of Nevada's Don D. Fowler in memory of Elden Johnson: "Archaeology in the 21st Century: We're All in the Past Together."

- [9] **Symposium ■ Rethinking Paleoindian Subsistence on the Southern Plains Periphery**
 Direct evidence in the form of plant and animal food remains and indirect evidence found at attributes of sites and artifacts do not support an interpretation of primary reliance on hunting large animals during most of the Paleoindian period, especially during Clovis and late Paleoindian times, on and near the southern Plains. Only Folsom sites are consistent in indicating specialized hunting of large herbivores. Components dating to the Paleoindian period but lacking diagnostic artifacts pose difficult interpretive questions in part because dating is not sufficiently precise to determine cultural chronology.
- [10] **General Session ■ Archaeological Method and Theory**
- [11] **Symposium ■ New Perspectives on the Tiwanaku Heartland**
 This symposium presents recent archaeological research relating to the demographic, political, and cultural core of the prehispanic Andean state of Tiwanaku (A.D. 400–1100), in the southern Lake Titicaca Basin of Bolivia and Peru. While the research bases of the participants include substantial excavations, extensive regional surveys, and intensive artifact analyses, all of the participants contribute to an emerging perspective of Tiwanaku as a pluralistic and dynamic social formation. Collectively, this research, the product of a decade-long binational research initiative, establishes the Tiwanaku, developing in a unique ecological and historical setting, incorporated substantial social diversity and promoted a rich, socially prestigious religious life.
- [12] **General Session ■ Western Asia, Africa, and Mediterranean Archaeology**
- [13] **Symposium ■ Maya Economic and Political Integration: A Perspective from Northwestern Belize**
 Considerable debate exists regarding the structure of Maya economic and political society. Ongoing research, particularly in the northwestern Belize region, has generated considerable insight into the dynamics of Maya societal integration and complexity. This symposium presents discussion on several key theoretical issues, including the internal dynamics of both small and large sites, the economic and political implications of Maya water management and land modification practices, the organizational framework of Maya specialization, and the role of administered production in developing political economies. Importantly, these investigations provide a much needed data base for cross-cultural comparisons, and examine theories of general anthropological concern.
- [14] **Poster Session ■ Eastern North America Archaeology**
- [15] **Symposium ■ Surplus Labor and Social Power**
 Surplus labor is defined as labor not directly contributing to household subsistence needs. Using a variety of case studies, this symposium examines the relationship between the control of surplus labor and social power to understand how control of labor contributes to the emergence, growth, and maintenance of social hierarchies. Archaeological evidence for labor control includes monumental architecture, public works, and wealth goods. The case studies examine the processes by which elites establish control, as well as the ways in which the products of surplus labor are used to maintain and extend political power.
- [16] **General Session ■ Old World: Paleolithic/Late Glacial**
- [17] **Sponsored Symposium ■ Time, Culture and Art, I: Small-Scale Societies**
 Art and symbolic systems are increasingly recognized as important, archaeologically visible components of prehistoric ideological systems. Although many inductive hypotheses have been forwarded for the social function of art, little systematic consideration has been made of the range of art's variability in function and meaning for societies and cultures of different types, scales, and levels of sociopolitical complexity. We begin such a consideration in this symposium by examining the art of small-scale, hunter-gatherer societies. Using archaeological and ethnographic case studies from around the world, we consider the techniques needed to address such problems, the variability present within and between specific societies, as well as the relationship between different expressive media within given cultures.
- [18] **General Session ■ Mississippian Archaeology**
- [19] **Symposium ■ Deciphering Anasazi Violence**
 Evidence of violence is claimed for human remains recovered from an increasing number of Anasazi sites. Yet, the extent and role of violence within Anasazi culture, whether warfare, social control, or homicide, remains undefined. Processes affecting human remains appear more complex, and Anasazi mortuary variability more extensive, than previously believed. Interpretations may be affected by decontextualized evidence, a lack of theoretical perspective, and simplistic assumptions about Anasazi culture. The physical evidence of Anasazi violence is examined, and alternative viewpoints offered. Questions of mortuary variability, and the roles of both warfare and ritual violence in Anasazi society, are also addressed.
- [20] **Symposium ■ Shell Ornament Production: A New World Perspective**
 Shells of freshwater and marine animals have been used by societies around the world for ornaments, utensils, and currency. For archaeologists, shell artifacts can be used to research craft production and specialization, exchange systems, and status differences. This symposium focuses on shell ornament production in North America, Mesoamerica, and South America, with papers discussing tools and techniques of manufacture, methods for identifying activity areas or workshops, the disposal of manufacturing residue, and the social context and scale of shell ornament production.
- [21] **Symposium ■ The Classic to Postclassic Transition in Western Mexico**
 The large territory considered western Mexico local, regional, and macroregional interactions over time and space produced complex sets of cultural, political, and economic units. Rather than being trapped in an eternal spring, these societies affected, and were affected by, major sociopolitical transformations occurring throughout Mesoamerica. The participants in this symposium will consider the nature and impact of the ecological, economic, and political changes that characterized the period from A.D. 700–1100 in a variety of zones in which recent research has taken place.
- [22] **Symposium ■ Doing Darwinian Archaeology**
 It has become clear from the past 28 years that Darwinian evolution is potentially a powerful explanatory tool for archaeology. Despite its clear potential, concrete application has lagged, largely because of the rigorous data requirements. Applications, at least in comparison with traditional interpretive approaches, are beginning to appear worldwide. This symposium brings together a selection of those applications in the hope that solutions to problems encountered in applying the theory can be exchanged.
- [23] **Symposium ■ Gender and the Interpretation of Power**
 Attention to expressions of gender difference in the archaeological record is beginning to be viewed as a useful approach to distinguishing relations of power in prehistoric societies. The importance that relations of power have to most other social constructions is indicated by traditional research foci on sociopolitical and socioeconomic expressions of power in the archaeological record. The papers in this symposium demonstrate the practical application of the approach in various archaeological contexts and challenges researchers to rethink assumptions that have plagued traditional approaches to and interpretations of prehistoric power relations.
- [24] **Sponsored Forum ■ State Archaeology Weeks**
 An important aspect of archaeological site preservation is public outreach. Since the early 1980s various states have embraced the "State Archaeology Week" approach as a way to focus the public's attention on the significance and fragility of archaeological resources. While the goal of public education is to encourage year-round archaeological awareness, archaeology weeks provide a focal point for special events including lectures, exhibits, tours and demonstrations. This forum is designed to present a variety of state programs, from a state that has sponsored its first observance, to those that have had extensive experience with this form of public outreach.
- [25] **Workshop ■ Advisory Council on Historic Preservation: Changes to Its Regulations (36 CFR Part 800) Implementing Section 106 of the National Historic Preservation Act**
 The Advisory Council on Historic Preservation is revising its regulations (36 CFR Part 800) implementing Section 106 in response to the 1992 Amendments to the National Historic Preservation Act. These new regulations contain numerous procedural and substantive changes that will affect how public archaeology is conducted. These changes include expanded requirements for consultation with Native Americans and the public; more reliance on Federal/State Historic Preservation Officer agreement; and the handling of no adverse effect determinations for data recovery. Council staff archaeologists are presenting this workshop to address questions about the changes and related implications for archaeology.
- [26] **Symposium ■ The Postclassic Revisited: Social Development and Chronology of Central Mexico**
 The Postclassic in central Mexico is considered both a developmental stage and a chronological unit. Recent archaeological research, however, demonstrates that we have over-generalized many developmental aspects and chronological sequences. Many of the sociopolitical changes from the break-up of Teotihuacan until the time of conquest—e.g., urbanism, militarism, and imperialism—had much earlier roots. Recent research also raises questions, empirical and

methodological, regarding the constructed chronologies which are the basis for interpreting Postclassic societies. Integrating new data into our basic models creates a more dynamic picture of development and time in the Postclassic Basin of Mexico.

[27] Symposium ■ **New Approaches to Later European Prehistory**

The archaeological database from later prehistoric Europe is one of the richest in the world, and many countries have long traditions of active research. New directions in research into later European prehistory are challenging traditional interpretations and opening new avenues for our understanding of processes of cultural change. The papers in this session, ranging chronologically from the Early Iron Age to the late prehistoric Viking period, illustrate some of these exciting new directions in research and suggest future implications of these new approaches.

[28] Symposium ■ **New Approaches to Method and Theory in Lithic Analysis**

The papers in this symposium address a diversity of issues in contemporary lithic analysis. Topics range from debitage analysis and refitting to obsidian hydration and craft specialization. The temporal scope ranges from the Pleistocene to the Historic period. The common thread that links these diverse subjects is the new perspectives that the papers introduce. These presentations offer alternative solutions to old methodological problems, point to refinements that are needed in data collection, and provide innovative views of the interpretation of past lithic technology.

[29] Symposium ■ **Artifact Trafficking and Marketing: The Commercial Threat to Preservation**

Recent successes in apprehending and prosecuting looters have not been accompanied by substantial progress in eliminating two major causes of the site looting problem: the commercial market for artifacts; and the resulting artifact trafficking network. This symposium deals with the scope and intensity of the commercial aspect of looting. Papers on artifact marketing, recent trafficking investigations and related topics will show that both prehistoric and historic artifacts are market commodities and that the trafficking network has vigorous domestic and international components. Enhanced recognition and understanding of the problem should intensify our efforts to combat this commercial threat to preservation.

[30] General Session ■ **Southwest: Environment, Technology, and Analysis**

[31] General Session ■ **European Bronze Age and Later**

[32] General Session ■ **South America**

[33] General Session ■ **Midwest and Midsouth Archaeology**

[34] General Session ■ **Latin America**

[35] Symposium ■ **Theory and Practice in the Southwest and Micronesia: Symposium in Honor of George Gumerman**

In 1993, the SAA acknowledged George Gumerman's many contributions to archaeology with its Distinguished Service Award. The current symposium, ranging from general theory to case studies and from the U.S. Southwest to Micronesia, reflects the depth and variety of Gumerman's professional career and the broad effect of his work on students and colleagues.

[36] Symposium ■ **Early Paleoindian Cultural-Ecological Adaptations in the Late Pleistocene Great Lakes Region and Northeast: Common Strategies or a Diversity of Approaches?**

This symposium is focused on the issue as to whether the Great Lakes region and the Northeast during the Late Pleistocene times constituted a distinct adaptive zone for Early Paleoindian peoples, resulting in the widespread development of similar subsistence adaptations, toolstone procurement strategies and lithic technologies, and land-use patterns. The seven papers will present overviews of the Pleistocene flora in the region as a whole, the record of Early Paleoindian occupation, and evidence for human association with mastodont. The papers will also highlight evidence for intraregional cultural relationships and/or shared cultural-ecological adaptations within the greater Northeast.

[37] General Session ■ **Maya**

[38] Forum ■ **Taxonomic and Faunal Summaries: What Should We Be Including in Our Faunal Reports?**

Most faunal analysts asking questions of subsistence and paleoecology would agree that taxonomic

identifications form the cornerstone of their research. Yet there is little agreement about what constitutes an adequate or appropriate faunal summary. Are simple lists of taxonomic frequencies sufficient? Should data summaries include explicit criteria used to assign specimens to taxonomic category? What approaches to reporting best advance our science and insure an adequate archive for future researchers? Given the tremendous (and increasing) number of faunal studies generated each year and the range in detail provided, it is time to examine our approaches to documenting taxonomic identifications. This forum assembles a panel of faunal specialists representing diverse research interests, regions and viewpoints to discuss basic questions of adequacy in faunal data reporting.

[39] Sponsored Symposium ■ **Time, Culture and Art, II: Culture Contact and Change, and Large Scale Societies**

Continuing the theme of exploring the social function and meaning of art in societies of different scales and contexts, the changing function and meaning of art in culture contact and change is considered, along with the place of art in larger-scale societies ranging from Pueblo groups to Mesoamerican and Andean states.

[40] Symposium ■ **Re-examining Theoretical and Methodological Approaches to Production and Specialization: Where Do We Go From Here?**

While there has been significant progress in refining archaeological interpretations of specialization and its relationship to social and political complexity, much research on this topic still tends to characterize aspects of production in fairly dicotomous, abstract terms. Developing more refined explanations of ancient economies requires and even greater emphasis on understanding the diversity of interests, strategies, and power relations that exist within and between various groups of producers and consumers. In this symposium, Old and New World archaeologists will critically examine recent approaches to production and specialization and their influence on economic research in their respective areas.

[41] Poster Session ■ **Old World Archaeology**

[42] Poster Session ■ **Southwest Archaeology**

[43] Poster Session ■ **Western North America Archaeology**

[44] Sponsored Forum ■ **Public Education and Your Career in Archaeology**

The purpose of this forum is to explore strategies for resolving potential conflict between professional advancement and public education activities. Six speakers representing academic and museum career tracks will discuss specific ways in which they have been able successfully to integrate public education and career advancement or have been able to effect a change in institutional priorities favorable to public education activities. Speakers will address the relationship between traditional aspects of professional evaluation (e.g., teaching, research, exhibit development, peer and administrative review) and public education activity.

[45] General Session ■ **Upper Midwest and Eastern Plains Archaeology**

[46] General Session ■ **Northeast Archaeology**

[47] Symposium ■ **Fleshing Out Formal Analyses: New Approaches to Archaeological Problems**

Many new analytical tools have potential uses outside of the domains of analysis where applicability is clearest (e.g., GIS's in land management). Because of archaeologists' expanding interest in complex problems (e.g., characterizing ecologies, site formation, socioeconomic contexts, or ideologies), innovative formal methods which clarify complex relationships or contrast different models are increasingly valuable. This symposium explores new ways of applying such tools as GIS's, complexity theory, artificial intelligence models, and alternative statistical methods (e.g., Bayesian estimation) to substantive problems outside well-defined paths of analysis.

[48] Invited Forum ■ **Finding Creative Solutions for Restructuring American Archaeology**

Recent legislation and serious fiscal austerity are having dramatic effects on the conduct of archaeology in the United States. As Federal and state budgets shrink, archaeologists are expected to produce more with less funding, while recent and proposed legislation offers Native Americans a far greater voice in the conduct of archaeology. These changing conditions challenge all of us with an interest in the past to develop creative ways to ensure protection and wise treatment of our cultural heritage. This session provides a forum in which representatives of government archaeology, academia, Native America, museums, and the private sector offer innovative approaches to

redefining the nature of archaeological inquiry in the United States.

[49] Symposium ■ **Northern Chilean Prehistory and the Atacama Desert, A Symposium Honoring Percy Dauelsberg II.**

This symposium is an attempt to put together and update archaeological data regarding research done in northern Chile in the last decades. Since the time the late Percy Dauelsberg first defined a more in-depth chronological sequence for the area, new approaches are revealing a more complex and diverse prehistory. Special attention will be focused on synchronic and diachronic processes dealing with both endogenous and exogenous cultural development, and in connection to the Andean as well as the Amazonian culture history.

[50] Symposium ■ **Feasting in Mesoamerica: Social Practice and Archaeological Signature**

The social practice of feasting is seldom invoked as a causal agent in the formation of archaeological deposits. Yet, ethnographic sources from Mesoamerica stress the central role of feasting to social cohesion, competition, and status within and between groups. Here, a diverse array of archaeological data from the Maya region—including fauna, ceramics, epigraphy, and ballcourt facilities—are examined in light of their relevance to food prestations. Ethnographic and historical data from the Mixteca further highlight the all-encompassing social aspects of feasting. The use of food and drink in the forging of political and marriage alliances and the emergence of social inequality is also considered.

[51] Symposium ■ **Archaeology, Geomorphology, and Paleoenvironment: Paleoindian Occupations in the Western Great Lakes**

Paleoindian groups in the western Great Lakes occupied glacially formed landscapes and environments that are quite different from those available to later groups. The geomorphic context is crucial to understanding site distribution and function as well as prediction of site location. Environmental reconstruction provides additional insight to land use during the late Pleistocene and early Holocene. An interdisciplinary approach that incorporates these data provides better analysis of Paleoindian occupations and lifestyles.

[52] General Session ■ **Maya**

[53] General Session ■ **South America**

[54] General Session ■ **Archaeology and the Public**

[55] Symposium ■ **Household Archaeology of Chiefdoms: An Example from Northwest Denmark**

The emergence of chiefdoms is demonstrated by the presence of chiefly activities—feasts, central architecture and space, status items, etc. But chiefdoms can exist even though the chief is archaeologically invisible. The Thy Archaeological Project in Denmark has spent four years studying the emergence of chiefdoms from the bottom up. The excavations focus on households of the Late Neolithic and Early Bronze Age, the transition period to early chiefdoms. The change in settlement patterns, household assemblages, and subsistence means, reflects new technologies, social structure, and concepts of value and status associated with chiefdoms. The Thy Project provides evidence of chiefdoms through the reconstruction of the ancient household.

[56] Symposium ■ **Craft Specialization in the Protohistoric American Southwest**

The papers in this symposium detail an archaeological case study of craft specialization in non-hierarchical societies. They focus on the production, exchange, and use of glaze ware ceramics made in the northern Rio Grande region of New Mexico from A.D. 1300 to 1700. A variety of techniques, including petrographic analysis, electron microprobe analysis, and measures of metric and nonmetric attributes are used to characterize the scale of production and exchange of this ware. Glaze ware use is addressed through analyses of the contexts in which early glaze vessels are found, and the relative size and frequency of glaze bowls at contemporaneous sites.

[57] Symposium ■ **Lithic Raw Material Analyses: Examples from the Old and New Worlds**

This session will explore analytical approaches of common interest in the study of lithic raw materials. Emphases upon technological and social considerations reflect particular prehistoric circumstances and general theoretical orientations. These papers examine lithic procurement patterns over differing temporal and geographical scales, regional lithic survey, and archeometry. It is suggested that raw material studies provide an important means of redefining the prehistoric landscape in natural and cultural terms.

[58] Symposium ■ **Ceramic Production in the Ancient Near East: Investigations of Production Context, Scale, Organization, and their Implications**

Ceramic production at Near Eastern tells is not frequently investigated, especially regarding Historic period assemblages. Such investigations, however, may yield interesting implications for political economy if diachronic changes in context, scale, organization or intensity of production are addressed. Though primarily derived from New World examples, a recently proposed discussion of craft production appears to have worldwide applicability (Costin 1991). The universality of this model will be assessed from the perspective of the late prehistoric/early historic Near East. Caveats and footnotes will be added to Costin's work and implications of ceramic production beyond systematics will be discussed for greater Mesopotamia and the Levant.

[59] Symposium ■ **Discontinuity in American Bottom Prehistory**

The 1984 publication of the FAI-270 summary, *American Bottom Archaeology*, has been viewed as a significant demonstration for a unilinear evolutionary pathway for Midwestern native cultures. This theoretical emphasis on stability and continuity stemmed largely from a project focus on establishing a firm regional chronology and culture history. However, ongoing research has sharpened earlier recognition of critical disjunctions in regional cultural history. In this symposium, regional scholars focus on these discontinuities in the archaeological record and discuss possible explanatory factors including areal depopulation, population influxes, physiographic change, political transformation, technological innovations, as well as the broader issues of modelling culture change.

[60] Symposium ■ **Situational Adaptation in the Late Pleistocene of Western Europe**

This symposium details intraregional variability during the Late Pleistocene of western Europe subsequent to the last glacial maximum including the period of time between 18,000–11,000 B.P. The symposium presupposes that the Late Pleistocene hunter-gatherer adaptation was dynamic in space, time and form and that the detailing of variability on an intraregional scale will lead to a more contextualized understanding of behavioral and cultural adaptation. The individual papers address various aspects of the cultural and/or behavioral variability of Late Pleistocene hunter-gatherers, drawing upon evidence such as subsistence, settlement patterns, and/or material culture from subregions within western Europe.

[61] Symposium ■ **Understanding Obsidian Hydration Dating: Recent Methodological and Experimental Advances**

The use of obsidian hydration dating as an absolute dating method has greatly increased since the early 1980s. As a result, problems with the precision and application of obsidian hydration dating have become more critical. Archaeologists have invested a tremendous amount of research to identify the factors that affect hydration rind formation and to develop a rigorous methodology for applying obsidian hydration dating. This symposium provides the results of recent research in both of these areas. By discussing the issues addressed within this symposium, the archaeological community will be able to apply this important means of dating with greater confidence and precision.

[62] Symposium ■ **Social Boundaries, Technical Choices, and Material Culture Patterning**

Papers in this symposium propose methods and scales of analysis for examining the relationship between social boundaries and material culture in the archaeological record. The papers examine patterning in a wide range of media, from ceramics and domestic architecture to the social use of space. Papers draw from archaeological, ethnohistoric and ethnoarchaeological case studies to explore how technical choices (expressed in technological styles and technical systems) reflect social boundaries. The fact that technological styles exhibit discontinuous spatial patterning holds great potential for studies of social boundaries. Symposium papers contribute to research on ethnic boundaries, migration, and the social anthropology of technology.

[63] Symposium ■ **Alternative Archaeology: Beyond the Anglo-American Paradigm**

The focus of this session is on the theoretical and practical aspects of alternative archaeological paradigms. Regions such as Latin America and eastern Europe have developed strong traditions outside of, and in contrast to, the commonly leading Anglo-American paradigms. However, little attention has been paid to these alternative archaeologies due to a series of linguistic, social, and political factors. This session will analyze what form these alternative archaeologies have taken, how they are related to their own geographical and socioeconomic settings, as well as provide a forum for a much needed dialogue between archaeologists from different regions of the world.

[64] General Session ■ **Maya**

[65] Symposium ■ **Formative Cultures of Western Bolivia: A Reappraisal**

Recent archaeological research in western Bolivia has revealed vibrant cultures with impressive traditions that were not simply evolutionary steps toward the Tiwanaku polity. The diagnostic styles

of these cultures imply strong local traditions and marked ethnic diversity. There is evidence for social, economic, and political interactions over remarkably long distances. This symposium brings together investigators of a series of adjoining altiplano and highland valley cultures to evaluate current information and discuss the theoretical and methodological issues that must be resolved if we are to achieve more meaningful appreciation and understanding of the early florescence of highland Bolivian cultures and polities.

[66] Symposium ■ **New Perspectives in Puebla Archaeology**

Archaeology in the State of Puebla, Mexico, has provided significant data for both culture-historical reconstructions and the understanding of man to land relationships in highland Mesoamerica. The papers in this symposium will further explore these areas through the discussion of information provided by recent research projects. We focus primarily on two aspects of Puebla prehistory: the role of volcanic activity in the formation of cultural traditions and the organizational aspects of the Late Postclassic kingdoms.

[67] Symposium ■ **Right-of-Way Archaeology: Responsible CRM, or Sell-Out?**

Federal Highway Administration and other agency policies insist archaeological excavations be confined to narrow rights-of-way. Attendant theoretical, methodological, and practical ramifications must be addressed by archaeologists and cultural resource managers prior to conducting or reviewing fieldwork undertaken within this restrictive framework. Is this a wise use of CRM funding? Are the data from ROW corridors within or between projects useful or comparable? Do these projects contribute to anthropological knowledge? What alternatives exist? Perspectives on these and other questions are offered by archaeologists and other cultural resource managers associated with a variety of projects in the Southwest.

[68] Sponsored Symposium ■ **Scientific Approaches in Zooarchaeology**

This symposium reviews and assesses the state of scientific research in zooarchaeology. The case studies presented cover a variety of time periods and locations. Topical coverage includes bone chemistry, bone conservation, marine diets and heavy metal toxicity, seasonal hunting and mortality profiles, butchery practices, paleoentomology, morphometric data from domestic animals, heat alteration of buried bone, and the application of bone roundness and weathering criteria to understanding assemblage formation.

[69] General Session ■ **Oceania**

[70] General Session ■ **Beringia and Paleoindians**

[71] Symposium ■ **The Early Late Woodland and Origins of Agriculture in Northeastern North America**

The symposium addresses, for the first time, an overview of the period during which agriculture was initiated in northeastern North America. The participants examine current perspectives and interpretations of the New England Late Woodland, Hunter's Home, Owasco, Clemson's Island, Western Basin and Sandusky, and Princess Point. Several papers detail preliminary results of an interdisciplinary project that reopens discussion on the Princess Point Complex in Ontario. Culture-history as well as paleoethnobotanical, ceramic, lithic and geomorphological issues are investigated.

[72] Poster Session ■ **Method and Theory in Archaeology**

[73] Poster Session ■ **Latin America Archaeology**

[74] Sponsored Forum ■ **Careers in Archaeology: Planning for Future Opportunities**

Career opportunities in archaeology are vastly different than they were one or two decades ago. Academic, government, and private-sector jobs are in constant flux, which means that yesterday's information may be obsolete tomorrow. Those working toward future employment in archaeology need a firm basis for planning a career path. Information is needed as well as a context within which to make sense of that information. This career forum, jointly sponsored by SAA and the Society for Historical Archaeology, presents a panel of active practitioners, representing various aspects of contemporary archaeology, who will share insights from their careers and provide perspectives on future employment opportunities, particularly for students and those "retooling" their careers. This session will open with brief statements by the panelists, and then become fully interactive between audience and panelists.

[75] Workshop ■ **I Just Got a Call**

"I just got a call from the Rotary Club or the sixth grade teacher. They want me to tell them all about archaeology. What do I do?" As archaeologists we are often called upon to present our

knowledge to audiences with backgrounds and interests different from those of our students and professional colleagues. Activities that involve people in the learning process will capture their attention and provide them with a lesson they will remember. This session will demonstrate two activities, distribute additional examples, and discuss the elements of a successful presentation.

[76] Symposium ■ **Slouching Towards Rome: Social Change in Central Mediterranean Prehistory**

From the Mesolithic at Uzzo Cave, to the Iron Age roots of Rome, Italy's archaeological record offers rich material for social interpretation. This symposium examines a series of key topics, including the economic and social transformations involved in Neolithic society, the nature of power, gender and social institutions in the Copper and Bronze Ages, craft production and long distance trade, and gender roles in the first millennium B.C. As a group, the papers present a coherent representation of some major problems in Italian prehistory, and of several theoretically significant approaches to common themes in the European archaeological record.

[77] General Session ■ **Archaeology in Eastern Asia**

[78] General Session ■ **Southwest: Households and Village Production**

[79] Symposium ■ **Appropriating the Past: The Sociopolitics of Archaeology**

The structure of archaeology as a discipline clearly privileges some aspects of practice over others. This structure mirrors the dynamics of the culture(s) within which archaeology is done, reflecting societal divisions of race, gender, and class. This symposium addresses the interaction of archaeologists and "others": the production and dissemination of knowledge about the past. The papers examine the subject to object relations inherent to anthropological work and the influence of modern communities on archaeological theory and practice. The research areas discussed include Egypt, Virginia, Europe, Australia, and Polynesia.

[80] Sponsored Forum ■ **Save the Past for the Future: An Open Forum on the Results of the 1994 Conference**

The Save the Past for the Future conference sponsored by the Society for American Archaeology was held in Breckenridge, Colorado, from September 19-23, 1994. The goal of the conference was to reevaluate the action plan developed five years ago and address new issues in site preservation and protection which have appeared since that time. Workgroups developed action plans for three kinds of site protection: site preservation through public education, resource protection through effective law enforcement, and archaeological sites in the context of the integrated ecosystem. This forum presents the results of the conference.

[81] Symposium ■ **Kin, Community, Polity, and Parish: Evaluating Regional Strategies for the Reconstruction of European Social Systems**

A number of ambitious archaeological projects with regional foci have been underway in Europe over the last two decades. Though the locales, time frames, and specific goals vary from project to project, there is a common link in that many seek to reconstruct and analyze the often complex social systems and processes that were regional in extent, and/or can only be understood within a regional context. This symposium offers the directors of these projects and opportunity to assess the efficacy of the strategies that were employed to realize their goals.

[82] General Session ■ **Current Research in Mexico**

[83] Sponsored Symposium ■ **Lithic Resource Procurement Research in the Upper Midwest**

While bound by a common geographic focus, recent lithic resource procurement research in Minnesota, Iowa, and Wisconsin has addressed a diverse range of analytical issues. Nine papers present advances in the study of lithic procurement and curatory technology; definition of raw material types; and the role of lithic raw material procurement in economic and subsistence strategies. Site-specific case studies focus on quarries, utilization of glacial lag deposits, or lithic procurement within associated habitation sites. The studies range in temporal focus from the Paleoindian to the Woodland Tradition.

[84] Symposium ■ **Social Configurations of the Near Eastern Early Neolithic: Community Identity, Heterarchical Organization, and Ritual**

This symposium attempts to synthesize recent anthropological and archaeological research on the emergence of social complexity of the Near Eastern Early Neolithic. Efforts to reconstruct key aspects of ritual practices, labor organization, and community membership draw on both the results of recent archaeological research as well as anthropological theory. Papers encompass a range of perspectives and utilize innovative analytic approaches to the study of mortuary, settlement pattern,

and architectural data to better understand the processes of economic development, social organization, and ritual behavior.

[85] Symposium ■ Life History Approaches to the Archaeology of Human Behavior

Life history studies examine the ways in which traces of human behavior accrue throughout the life span of artifacts to produce variability in the archaeological record. As an analytical unit, the life history of an object or assemblage is the fundamental point of reference for documenting persistence and change in the historical development of specific human behaviors. By emphasizing the historical and behavioral nature of the events that create the archaeological record, life history analysis provides both a powerful organizing framework for behavioral inference and, ultimately, an empirical foundation for describing and explaining variability in human behavior itself.

[86] Symposium ■ Multi-Craft Production in a Domestic Context at the Ancient Ejutla Site

At the ancient Ejutla site, Classic period households were involved in the production of a range of different crafts, including the fashioning of shell ornaments and the manufacture of ceramic vessels and figurines. While some of the technologies that were employed by Ejutla craftworkers crosscut materials, their diverse craft products (and the resources from which they were made) were procured, consumed, and distributed through markedly different spheres of socioeconomic interaction. The implications of domestic-scale, multi-craft production for more general models of economic specialization are addressed.

[87] Symposium ■ Pleistocene-Holocene Shorelines and Channel Margins: The Geoarchaeological Context of Human Entry into Eastern North America

This symposium surveys research of the geologic setting for Paleoindian entry and human settlement of eastern North America. During the past decade, an increased focus on geoarchaeology has produced sites where late Pleistocene and early Holocene archaeological materials can be found in geologic contexts that provide high resolution contextual data. These geologic settings provide temporal and geographic boundaries for human settlement of eastern North America. This session brings together scholars working in lacustrine, alluvial, karst, and inundated paleo-geomorphic settings. Of particular interest is the identification of paleosols and sedimentary changes marking the Pleistocene-Holocene boundary and locations for the discovery of Paleoindian sites.

[88] Symposium ■ Integrative Approaches to Recovery of Mind, Meaning, and Social Identity in Maya Archaeology

The process of excavation, recovery, organization, synthesis, and interpretation of field data in Maya archaeology normally grows out of a focus on a single site or regional settlement system. The papers in this symposium differ from the norm in that they incorporate data and collections from several excavations, namely: Altun Ha, Lamanai, Tipu, Marco Gonzalez and San Pedro, all in Belize. The papers differ also in drawing significantly on method and theory in ethnohistory, history, and social anthropology. The result is a range of new perspectives that bear on method and theory in archaeology.

[89] Symposium ■ Climate and Culture in the Mid-Holocene of Andean South America

The mid-Holocene period (ca. 8000 to 3000 B.P., just before, during, and just after the "climatic optimum") was a time of significant global climate change. Archaeological research in the central Andes has found that it was also a time of dynamic cultural change and interaction. The papers in this symposium address the relationship between climate and culture during the mid-Holocene from a variety of perspectives. Both the contribution of archaeological research to climate history and the utility of climate data in archaeological interpretation are addressed in the context of case studies from both coastal and highland settings in the central Andes.

[90] General Session ■ Latin America Archaeology

[91] Workshop ■ Educators' Workshop: Teaching Archaeology

Archaeology education is an important part of the archaeological profession. This eight hour workshop will be presented for local educators and curious archaeologists. It will feature hands-on activities which illustrate process and concepts. Materials and activities are classroom ready (targeting grades 4 through 7).

[91A] Sponsored Forum ■ NAGPRA and the Disposition of Unaffiliated Human Remains

The issue of unaffiliated and unclaimed human remains and objects will be addressed, including proposed recommendations for the disposition of such remains and items developed by the Department of the Interior's NAGPRA Review Committee.

[92] Symposium ■ The Dynamics of Material Culture and Social Processes: The Interplay Between Theory and Data in Mimbres Archaeology

The one-dimensional view of the prehistoric Mimbres of southwestern New Mexico based on their spectacular painted pottery has been challenged by a more holistic and anthropological approach. This approach, which seeks to place the Mimbres in a more complete social and cultural context, necessarily deals with the intersection of theory and data as well as the relationship between various categories of Mimbres material culture. The papers in this symposium explore the limits of interplay between theory and data in order to develop a more complete perspective on Mimbres society.

[93] Symposium ■ Native American Agricultural Strategies of North America

In addition to crops, Native American agricultural technology included methods of preparing, planting, cultivating, harvesting and storing crops that were very different from those used in contemporary Europe or from today's commercial agriculture. Archaeologists, ethnohistorians, ethnobotanists and Native Americans present papers developing the topic of what we know, from historic documents, traditional accounts, and archaeology, about indigenous farming from New England to Arizona.

[94] Symposium ■ Revisiting Cerros: New Strategies for Research at the Late Formative Maya City

Begun in 1991, the Cerros Cooperative Archaeological Development Project (CCADP) was prompted by joint research and tourist development goals laid out by the Principle Investigator and by the government of Belize. While previous research prompted the current archaeological investigation, deterioration of major architecture at Cerros stepped up the current timetable. A search for proper consolidation and tourist development strategies was implemented in Phase I of the project, which encompassed remapping and limited testing in the site core. Results reported in this symposium address both the site's archaeological history and its future within the developing ecotourism industry in Belize.

[95] Symposium ■ Late Neolithic Transitions in the Southern Levant

Archaeological and environmental research over the last decade allows us to re-examine explanations for the disappearance of large, complex villages of the pre-Pottery Neolithic B and the relative scarcity of the Late Neolithic sites that replaced them. Work in Israel and Jordan sheds light on the introduction of pottery, the "destandardization" of lithics, and other Neolithic changes that set the scene for the Chalcolithic and Early Bronze Ages.

[96] Symposium ■ Paleo-Landscape Change in the Indo-Pacific: Current Research

Human strategies, be they industrial, agricultural, or preagricultural, have had environmental consequences for thousands of years. On the other hand, landscapes offer constraints and opportunities that can strongly influence human techno-strategies. Moreover, environmental conditions can evolve over time in mutualistic relationship with human strategies, or be independently impacted by secular trends of climatic or geomorphological change. This symposium presents current research in the Indo-Pacific region addressing issues of Late Pleistocene and Holocene human-landscape interaction. Geomorphological and paleobotanical evidence from site-specific and regional contexts is used to address issues of human choices and consequences in relation to the region's diverse landscapes.

[97] Symposium ■ The Early Upper Paleolithic in Eastern Europe and Russia

The face of Paleolithic archaeology in eastern Europe and Russia has changed dramatically over the last decade. Drawing upon new dating technologies and new site information, archaeologists have turned their attention to the Middle-to-Upper-Paleolithic transition. In this symposium, participants discuss the early Upper Paleolithic in the heartland of Eurasia, from the Danube River basin in Hungary to Lake Baikal in Siberia, addressing issues such as the origins and spread of the Aurignacian, chronology, lithic technology, raw material procurement, and human paleoecology.

[98] Symposium ■ Native Copper and Indigenous People in the Past: Perspectives from Eastern North America

This session places native copper as the focus of archaeological inquiry of the indigenous people of prehistoric eastern North America. Although present at a number of sites, native copper has received far less attention than other classes of material culture. In recent years, there has been a renewed interest in this understudied topic. This session includes reports by two laboratories that have prioritized native copper research as well as papers from scholars examining native copper in the Great Lakes region, the Ohio Valley, New England, eastern Canada, and the Southeast.

[99] Symposium ■ **The Moquegua Archaeological Survey: New Research on Settlement and Subsistence in the Middle Osmore River Valley, Peru**

At various times in its singular culture history, the Moquegua valley has been the scene of indigenous agrarian and political development, a crossroads of some of the Formative's first states, the contended frontier of the Tiwanaku and Wari's Middle Horizon empires, and a distant dominion of the Inka. Results of the first two seasons of the Moquegua Archaeological Survey, complementing ten years of site-centered investigations, permit a regional perspective on temporal variability in agrarian, domestic, exchange, ceremonial and mortuary patterns among Formative, Tiwanaku, Wari, and Late Intermediate occupations. These data shed new light on the demographics and settlement dynamics of state and chiefdom-level societies in the south central Andes.

[100] Symposium ■ **New Perspectives in the Archaeology of the Alutiiq Region, Southwest Alaska**

The Alutiiq region in southwest Alaska is historically one of the most geologically active and climatically challenging, yet environmentally rich areas in North America. Archaeological and environmental field research between 1991 and 1994 yielded important new information on prehistoric environments and regional cultural change. The symposium presenters provide a refinement of our understanding about how geomorphological and climate changes affected prehistoric human populations, a modeling of subsistence and settlement patterns for Prince William Sound and the greater Alaska Peninsula, and a consideration of cultural continuity and change throughout the region.

[101] Symposium ■ **Advances on the Periphery: The North Atlantic from the Iron Age to the Middle Ages**

In recent years researchers in the North Atlantic, from Norway to Greenland, have brought fresh theoretical perspectives and detailed scientific analyses to bear on the archaeological and documentary material. This work has greatly increased our understanding of this "periphery" on the edge of Europe from the Iron Age to more modern times. The papers in this symposium will focus on both the development and analyses of specific sites and areas, and the greater context in which such sites can be viewed.

[102] Symposium ■ **Archaeology, Architecture, and Artifacts: Critical Approaches to Interpreting the Past**

Critical archaeology has emerged over the past decade as a distinctive branch of postprocessual archaeology. During the same period, Deerfield, Massachusetts, has been the focus of intensive investigations by archaeologists, historians and students of material culture. Deerfield is an appropriate locale to develop such a critical archaeology because the village has figured over the past century in professional discussions of New England's Native and European histories. This session reports on how critical archaeology has been practiced in this locale, and how the practice has influenced a more general understanding of critical archaeology.

[103] Symposium ■ **Resource Intensification Among North American Hunter-Gatherers**

Resource intensification is often associated with the appearance of sedentism, nucleation, and sociopolitical complexity. Many researchers have viewed this as the inevitable outcome of cultural evolution. NeoDarwinian evolutionists reject this assumption as teleological, arguing that variable behavior and environmental, demographic, and socially mediated selective pressure produce a variety of both unique and predictable cultural patterns. Shifts towards and away from resource intensification across transitional intervals in late Pleistocene and Holocene prehistory are examples of this process. This symposium provides a North American focus on variability in hunter-gatherer responses to changing resource configurations and demographics in order to explore evolutionary processes.

[104] Symposium ■ **Earthworks, Forts, and Villages: Unraveling the Sacred from the Secular**

The archaeological correlates of ceremonial sites versus habitation sites are not always well defined. Especially problematic are prehistoric sites associated with earthworks in the Eastern Woodlands. Interpretations of such sites typically rely on untested assumptions and limited analyses, yet distinguishing ceremonial versus residential function requires thorough analyses of artifact assemblages and site structure. This problem is addressed using a variety of analytical approaches and examples from many cultural traditions. Resolving these issues of site function will lead to more robust and accurate models of regional cultural dynamics.

[105] Symposium ■ **Current Research on Paleoindian Archaeology and Geoarchaeology of the Central High Plains and Rocky Mountains**

Colorado's central High Plains and Rocky Mountains have long been a rich source of data for

reconstruction of Paleoindian lifeways, from the earliest Clovis and Folsom discoveries at Lindenmeier and Dent in the 1920s and 1930s to more recent work at Lamb Springs and Jones-Miller in the 1970s and early 1980s. That long tradition of Paleoindian research continues today, and, in many ways, is beginning to accelerate, with a variety of on-going and planned interdisciplinary projects by museums and universities. This symposium highlights current interdisciplinary Paleoindian projects in Colorado's eastern high plains, foothills, and high altitude Rocky Mountains by the Denver Museum of Natural History, and the universities of Arizona, Colorado, Michigan, Northern Colorado, and Wyoming.

[106] Sponsored Forum ■ **United States Indian Policy and the Conduct of Archaeology on Indian Lands: A Dialogue with the Bureau of Indian Affairs**

The Bureau of Indian Affairs is the primary agency for execution of Federal Indian policy. Its role, however, is widely misunderstood, largely because the regulatory environment on Indian lands differs from that on Federal lands. Consequently, an increasing number of professional archaeologists have unwittingly been in jeopardy of felony prosecution under the Archaeological Resources Protection Act while operating on Indian lands. Bureau archaeologists will address the Federal trust relationship with Indian tribes and the special conditions this creates for the conduct of archaeology on Indian lands. Archaeologists who interact with Indian tribes in any way should find the discussion useful.

[107] General Session ■ **Southwest Archaeology**

[107A] Public Session ■ **Learning from the Past: Getting Involved in Archaeology**

So often a writer's or filmmaker's interpretation is a person's first exposure to archaeology, but how much of fact is lost in the creative process? This idea and more are explored as part of a public forum that includes special computer demonstrations of software with archaeological themes. The session also examines Native American history of the Twin Cities area.

[108] Symposium ■ **Cultural Resources Management: A Reassessment**

It has been nearly 30 years since passage of the National Historic Preservation Act. The resulting field of cultural resources management is maturing, experiencing the joys, disappointments, and reassessments that occur as middle age nears. This paper will review the joys and successes, the disappointments and failures. It will emphasize reassessment—how can we refocus our efforts to fulfill the promise made nearly 30 years ago. It will introduce the other papers in the symposium and its goal—to develop resolutions that will be presented for passage by the SAA at the business meeting.

[109] Fryxell Symposium ■ **Current Interdisciplinary Research on Early Farming Communities**

This collection of papers honors the Fryxell Awardee, Professor Robert Braidwood. His initiative in interdisciplinary research inspired several generations of scholars in archaeology and other fields. Some of these scholars present current approaches in the Near East and beyond.

[110] Symposium ■ **Middle Missouri Subarea Archaeology Since the RBS**

Although similar in intent to the River Basin Survey's programs, investigations of the last millennium's past landscapes, climates, biomes, and agrarian communities of the Missouri River trench in North Dakota and South Dakota now are advanced through computer-assisted, regional-scale analyses and geoarchaeological investigations of grossly attenuated archaeological records. New perspectives are afforded on archaeological field conditions, regional chronology, and culture change.

[111] Symposium ■ **New Studies of Chacoan Outliers**

An understanding of how Chacoan society was organized requires research on both sites in Chaco Canyon as well as on so-called Chacoan outliers. While the canyon has been the focus of fairly sustained fieldwork for over a century, investigations of outliers have been sporadic. Over the last decade, the list of known outliers has greatly expanded but questions about how these communities were organized and what their relationship was to Chaco Canyon remain unanswered. This symposium considers these questions as it presents the results of the most recent outlier research.

[112] Symposium ■ **The Western Amazon: New Directions in Research**

Western Amazonia, particularly eastern Ecuador and Peru, and southeastern Colombia, is archaeologically one of the least-known areas of the Amazon Basin. This is particularly true for the smaller rivers and interflaves. Presented are papers on Holocene land use and climate variation, resource base of different settlement patterns, and insights the surviving material culture, both prehistoric and ethnographic, can bring to an understanding of both settlement pattern and resource procurement.

[113] Symposium ■ **Between Heaven and Earth: Theory of Method in Archaeology**

Debates over the past decade have focused on the relationship of theory and method. The new archaeology sought to make archaeology more scientific by using logico-deductive approaches, middle range theory, and quantification. Postprocessual archaeologists assert the unity of theory and method, proposing that method is defined by theory, but serious difficulties exist in moving from abstraction to the ground. All archaeologists must confront the dilemmas and solutions of gathering and interpreting data. This symposium asks a variety of practitioners to discuss the articulation and disarticulation of theory and method in contemporary archaeology.

[114] Symposium ■ **Ideology and Cultural Complexity in the Northern Maya Lowlands**

Recent advances in archaeology, epigraphy, and art history contribute to understanding of the cultural complexity that characterized northern Yucatan during the prehispanic period. The focus is on the regional expression of Classic Maya ideology and the way that emblems of power, political and social structure were manifest. Key to this approach is the cosmological framework which integrated ancient Maya society.

[115] Symposium ■ **Archaeological Investigations in the Cerrillos River Valley, Ponce, Puerto Rico**

Archaeological investigations in the Cerrillos River valley began in 1978 and continued through 1991. During this period a number of prehistoric and historic archaeological sites were studied by a variety of firms and institutions, with the results presented in contract reports. This symposium presents the major findings of the Cerrillos River projects, which in aggregate represent the most extensive and comprehensive archaeological investigations conducted in Puerto Rico to date.

[116] Symposium ■ **Regional Perspectives on Paleoindian Subsistence and Diet Breadth**

Presented is current research about Paleoindian subsistence practices in diverse regions throughout the New World. New data and changes in archaeological thought about variability in Paleoindian diet breadth over the past several years have challenged the "big-game hunter" stereotype of Paleoindian adaptations. These papers highlight an investigation of geographic and temporal variation in Paleoindian subsistence. Together they provide a useful forum to compare regional records of this subsistence. Such comparisons yield insight into the large scale processes of human colonization and regional ecological adjustments of terminal Pleistocene hunter-gatherers in the New World.

[117] Symposium ■ **The Transition to Agriculture in Prehistoric Europe**

Agriculture arrived in Europe between 7,000 and 4,000 B.C. Until recently, this introduction was thought to have been brought about by foreign colonists. Evidence from the fields of linguistics and genetics has been used to support this view of the agricultural colonization of Europe. Some, however, have suggested that this transition was an "inside job," resulting from indigenous local groups adopting Neolithic materials and practices. One of the reasons for convening a symposium on the transition to agriculture at this time is the availability of substantial new information. Key questions will concern the how and why of this transition.

[118] General Session ■ **Southwest: Social and Political Organization**

[119] General Session ■ **Old World Archaeology**

[120] General Session ■ **Eastern North America Archaeology**

[121] General Session ■ **Western North America Archaeology**

[122] Plenary Session ■ **Telling Archaeology: Parks, Museums, Print, and Video**

Traditional means for communicating archaeology to the public have been parks and monuments, museums, books, magazines, and educational television. Complementing the SAA's recent initiatives in classroom and nontraditional education, this session brings together leaders and representatives of museums (National Museum of the American Indian, Museo de las Culturas del Norte, American Museum of Natural History), parks (NPS, AMNH, INAH), print media (*Archaeology* magazine, *Illustrated History of Humankind*, *The Native Americans*), and video ("Archaeology" on TLS, "Rediscovering America" on Discovery Channel). The participants will briefly describe how their current undertakings reflect their institutional goals and philosophies, followed by a general discussion of future trends in "telling archaeology."

[123] Symposium ■ **Unit Construction in Archaeology: Measurements of Space, Time, and Material**

Units in science package variability in order to investigate or resolve some research problem. Unit construction, an admittedly awkward phrase, refers to the logic that guides construction efforts as well as the resulting structures. Taxonomies, classifications, and typologies define particular

structures; they do not address the range of scientific activity involved in the formation and evaluation of units. Participants discuss archaeological units at differing analytic scales, from sediments to settlements. The goals are to consider the logic that drives particular unit constructions, the range of variation incorporated within units, and the evaluation of these packages for problem solving.

[124] Symposium ■ **Cultural Logic, Social Agency, and the Political Dynamics of Technology: Beyond the Tangible**

The role that social agency and cultural logic make to the shape and longevity of technological systems has been underestimated in archaeological theories of social life and culture change. Through the enactment of technical choice all technologies are expressions of world views, strategies of social differentiation, and power. By what means can the dynamic yet intangible social dimensions of technology be understood through the study of material culture? Participants in this session explore issues of social agency and "politics" helpful for undertaking a human-centered study of technology by presenting case studies that cover many different technologies and social settings, past and present.

[125] Symposium ■ **The Archaeology of Colonialism and Imperialism in Latin America**

The papers in this symposium address methodological and theoretical issues inherent in the archaeological study of imperial and colonial societies in Latin America. A comparative perspective is developed through the treatment of the major Precolumbian empires (Inka, Aztec), the Spanish empire, and post-colonial societies in the New World. Participants seek an answer to the question of how can archaeology contribute to a better understanding of these societies and of the phenomena of colonialism and imperialism in general. A central theme is the correlation of material culture patterning with function, status, ethnicity, and gender.

[126] General Session ■ **Southwest: Culture History and Change**

[127] Symposium ■ **Northwestern South American Archaeology: Papers in Memory of Dr. Gerardo Reichel-Dolmatoff**

Reichel-Dolmatoff died on May 15, 1994. His career stands as an example to all anthropologists in his dedication to fieldwork and prolific publication of results. His major contributions are in the archaeology and ethnography of northwestern South America, especially Colombia. He was a pioneer in the research of Colombian chiefdoms as well as in his investigations of topics such as the origins of agriculture and sedentism, symbolism in archaeology, hallucinogenic rituals and iconography, and ethnoarchaeology. This symposium in his honor will highlight many of the recent advances made in these areas and build on the foundations set by his life-long work.

[128] Symposium ■ **Settlement, Society, and Power in Scandinavia and the British Isles During the First Millennium A.D.**

The first millennium A.D. in northwestern Europe was an era of significant political, social, and economic transformation. Changes in settlement and subsistence systems, social and political organization, gender relations, and the production of materials will be examined, beginning with the background in the pre-Roman Iron Age to the development toward urbanization in the later Iron Age and Early Middle Ages. These papers will discuss recent fieldwork as well as present syntheses of current research in southern Sweden, Denmark, Scotland, and England, ranging from specific faunal and paleobotanical analyses to spatial analysis and the study of state formation processes.

[129] General Session ■ **Mid-Atlantic and Southeast Archaeology**

[130] Symposium ■ **Northern Yucatan: Prehispanic Maya Community and Social Organization**

Recent archaeological investigations in northern Yucatan, Mexico, provide insight into current interpretations of prehispanic Maya community and social organization. A holistic perspective on ancient Maya society is attempted with topics ranging from economics, trade, and subsistence to new interpretations of architectural function. Many papers focus on the elusive questions of chronology and ethnicity associated with the Terminal Classic period.

[131] Sponsored Symposium ■ **Environment and Subsistence: Integrating Phytoliths into the Archaeological Record**

Continuing research in method and theory has expanded the options for utilizing phytolith data in archaeological research. This symposium illustrates the diverse approaches by which phytoliths are able to contribute to questions of past subsistence strategies and environmental conditions. While phytoliths are the common denominator, teeth, isotopes, artifacts, residues, features and coprolites all should provide food for thought in both the phytolith and archaeological research communities.

[132] Symposium ■ **EM, HM, CRM, and Archaeology: Myths, Facts, and Realities Explored**

This symposium explores the many facets of change (societal, agency, and general) and how these are requiring that the cultural heritage programs be managed at the landscape scale within an ecosystems framework. There is a need for application of the discipline to contemporary, real world problems. We will discuss the integration of the cultural program into ecosystems; how to place cultural change into ecosystem models; and explore cultural heritage management partnerships, forming among academic, federal, and private enterprise. In addition, we will look at what the future will bring through "reinventing government."

[133] General Session ■ **Arctic and West Coast Archaeology**

[134] Sponsored Symposium ■ **The Earliest Americans National Historic Landmark Theme Study**

The Earliest Americans National Historic Landmark Theme Study is a multiyear partnership initiative of the National Park Service and the Society for American Archaeology to identify, evaluate, designate, and protect sites and districts associated with America's earliest inhabitants. Project personnel are working with federal, state, local, and tribal governments, professional societies, and individual scholars, avocationists, and preservationists to develop a nationwide preservation planning document that will establish the context for the designation of new National Historic Landmarks, the updating of documentation for existing NHL's, and the nomination of properties of regional, state, and local significance.

[135] General Session ■ **Plains Archaeology**

[136] General Session ■ **Archaeological Method and Theory**

ABSTRACTS OF INDIVIDUAL PRESENTATIONS

Aaberg, Stephen A. (Aaberg Cultural Resources Consulting): [116] (see *Davis, Leslie B.*)

Abel, Timothy J. (Toledo): [71] (see *Stothers, David M.*)

Abbott, David R.

[118] **Recognizing the Limitations of a Settlement-Pattern Approach for Building Models of Social Organization**

Settlement-pattern analysis is a basic tool for reconstructing prehistoric social organization. However, the approach by itself, without direct measurements of interaction, can overlook primary aspects of human organizational structures, especially nonlocalized kinship networks. Consequently, it predisposes researchers to model past organization inappropriately, as modular and hierarchial. To illustrate this effect, a case study is presented from the Hohokam culture area of southern Arizona. By supplementing settlement data with measurements of interaction using local ceramic exchange, a social pattern emerges that markedly differs from previous hierarchial models, which were built from settlement data alone.

Adams, Brian (Illinois-Urbana/Champaign)

[97] **The Middle to Upper Paleolithic Transition in Northeast Hungary and Changing Patterns of Lithic Raw Material Acquisition**

The Bükk Mountain region of northeast Hungary offers a unique opportunity to investigate human behavioral changes during the Middle to Upper Paleolithic transition in Europe due to the presence of several Middle, "transitional," and Early Upper Paleolithic sites. Results of recent analyses of lithic raw material acquisition and distribution at these sites are presented.

Adams, Jenny L. (Arizona)

[85] **Life History as a Framework for the Analysis of Ground Stone**

The life history concept creates a framework for recognizing prehistoric and historic behaviors that shape the nature of ground stone assemblages. Archaeologists never work with complete assemblages. Artifacts were taken upon abandonment, scavenged, missed by excavators, or missed by sampling strategies. A tool may have been discarded after it was manufactured, after light use, or after it was redesigned for use in a second activity. Two concepts, concomitant use and sequential use are introduced to identify when in the life cycle a second use occurred.

Adams, R. E. W. (Texas-San Antonio)

[13] **A Regional Perspective on the Lowland Maya of the Northeast Peten and Northwest Belize**

Work in the countryside around the urban centers of Rio Azul, Kinal, and La Milpa has offered new data and insights. Some tentative conclusions are offered. One is the strength of periodicity of both occupation and political florescence by site and region. Another is that the Hiatus appears to have been a period of population decline in the region. Theoretical implications are drawn.

Adovasio, J. M. (Mercyhurst): [57] Discussant; [30] (see *Hyland, David C.*)

Adovasio, J. M. (Mercyhurst), *O. Soffer* (Illinois), and *B. Klima* (Czech Academy of Sciences)

[16] **Paleolithic Fiber Technology: Data From Pavlov I, Czech Republic, Ca. 27,000 B.P.**

Extensive past research on Paleolithic technologies has focused on the manufacture and use of stone and—to a lesser extent—bone, antler, and ivory artifacts. Coeval technologies in more perishable media sporadically reported from Paleolithic sites have received much less attention. This paper reports on fiber impressions on clay recovered from the Gravettan site of Pavlov I in the Czech Republic. Together with coeval data from the nearby site of Dolni Vestonice I, the fiber impression data from Pavlov I attest to the use of fine twining to produce flexible fabrics some 27,000 years ago. These remains, representing the oldest examples of weaving known in the world to date, confirm the existence of numerous technologies in the Pleistocene which, because of depositional and post depositional factors, have escaped detection.

Ahler, Stanley A. (Northern Arizona): [70] (see *William, Jerry D.*)

Ahler, Stanley (Northern Arizona), *Craig M. Johnson* (BRW, Inc.), *Herbert Haas* (Desert Research Institute-Reno), and *Georges Bonani* (ETH-Hoenggerberg)

[110] **Reevaluation of Plains Village Radiocarbon Dating in the Middle Missouri Subarea**

A ¹⁴C data set has emerged over 15 years that alters basic understanding of Middle Missouri chronology. Key is (a) 69 dates from the Knife-Heart region produced by the Southern Methodist

University lab as part of the Knife River Indian Villages research program, and (b) 54 dates by the SMU lab and the ETH-Hoenggerberg lab produced under the Smithsonian Institution Repatriation Program. Evaluation of sites lacking primary evidence for long-term occupation allows us to assess reliability and validity for most existing dates. A core set of usable dates emerges, yielding a new chronological framework for village components in the subarea.

Aimers, Jim (Tulane)

[37] **Maya Urban Form in Comparative Perspective**

Maya urban form has puzzled investigators because it does not seem to exhibit regularized formal qualities nor reflect identifiable organizational principles. Beyond the plaza group, the relationship of buildings in Maya cities appears haphazard and consequently Maya cities are often considered unplanned. A comparison of Maya urban form with the urbanism of the gridded Classical city, the "organic" Medieval city, the "geomantic" Asian city, and other non-Western city forms help in characterizing the nature of Maya cities. A cross-cultural perspective can be useful in suggesting the cognitive and practical forces which shaped the Maya city.

Akins, Nancy J. (Museum of New Mexico)

[19] **Prehistoric Violence Along the La Plata River in New Mexico**

Recent excavations by the Office of Archaeological Studies of the Museum of New Mexico recovered three human bone assemblages with characteristics some consider as indicating violence or cannibalism. All are from the fill of pitstructures, exhibit large amounts of breakage, and represent from at least five to 17 individuals including an infant, children, and adults of both sexes. While a check list approach would categorize all three as the "residuum of cannibalism," one is clearly the result of more natural site processes and a second is questionable at best, raising questions about the utility of a check list approach.

Albarracín-Jordan, Juan (Universidad Mayor de San Andrés, Institute of Andean Studies)

[65] **On Segmentary Dynamics: The Evolution of Settlements in the Tiwanaku Valley, 1000 B.C.—A.D. 100**

Human settlement in the Tiwanaku Valley, between 1000 and 100 B.C., was characterized by great diversity in the ceramic styles, settlement configurations and subsistence strategies. At the turn of the first millennium A.D. a new trend in regional integration began. Sociopolitical transformations of the first four centuries of our era remain poorly understood. Common arguments to explain Late Formative social developments have been derived mainly from archaeological work at single major centers such as Lukurmata and Tiwanaku. Regional settlement research in the Tiwanaku Valley provides a unique perspective in understanding the evolution of higher levels of integration.

[11] **Tiwanaku: A Segmentary State in the South-Central Andes**

Various models of social organization have been proposed to explain Tiwanaku's evolutionary trajectory, but most have derived from Euro-centric theoretical approaches to state formation, emphasizing high centralization, bureaucracy, and the monopoly of force as intrinsic components of the early state. Archaeological research on Tiwanaku settlement patterns, coupled with ethnohistoric and ethnographic work on the traditional principles of Aymara social organization, provide arguments for the segmentary character of its organization. An alternative model of "nested hierarchies" is presented to address issues of segmentation, integration, and disintegration in prehispanic Tiwanaku society.

Albert, Rosa María (Universidad de Barcelona), *Linda Scott Cummings* (PaleoResearch Labs), *Josep Maria Fullola*, *Pilar García-Argüelles*, and *Jordi Juan*

[131] **Phytolith Analyses of Upper Paleolithic to Neolithic Firepits from Two Archaeological Sites in the Northeastern Iberian Peninsula**

We present results of phytolith analyses carried out at two archaeological sites: Cova del Parco (Alòs de Balaguer) and Abric del Filador (Margalef del Montsant), both in northeastern Spain. The samples represent several firepits from Upper Paleolithic, Epipaleolithic, and Neolithic levels. Results address the use of plants as fuel and provide dietary and paleoecological information. Phytoliths found in Cova del Parco are mainly siliceous, while in Abric del Filador they are mainly calcium oxalate. These differences are analyzed and a possible interpretation given. The results are finally compared with other archaeobotanical analyses including pollen and charcoal from the same sites.

[105] (see *Cummings, Linda Scott*)

Alcock, Sue (Michigan): [125] Discussant

Alconini, Sonia (Pittsburgh): [11] (see *Hastorf, Christine*)

Alconini, Sonia (Pittsburgh) and *John Janusek* (Chicago)

[65] **Ceremonial Diversity and the State: The Late Formative to Early IV Periods at Tiwanaku and Lukurmata**

Our understanding of the transformations involved in the emergence of the Tiwanaku polity remain enigmatic. This paper sets out to examine recent archaeological patterns dating to A.D. 300–600 at two complex settlements in the southern Titicaca Basin. The data, involving patterns in the site centers and peripheries, indicate that distinct forms of ritual, public and private, were significant during this period, and that theocratic principles were crucial to the imminent development of sociopolitical complexity in the region.

Aldenderfer, Mark (California-Santa Barbara)

[89] **Human Responses to Climatic Deterioration in the Mid-Holocene of the South-Central Andean Highlands**

Despite local variations in timing and severity, it appears that climate begins to deteriorate in the highlands of the south-central Andes after 7500 B.P., and does not improve substantially until after 5000 B.P. By looking at three areas—the upper Osmore drainage, the upper drainages of the major streams of far northern Chile, and the southwestern Lake Titicaca plain near Juli—and by comparing settlement patterns and diet choice in each of these three regions insofar as they are known, it is possible to identify the primary strategies used by the foraging groups of these areas in response to this deterioration. These strategies will be reviewed, and the implications these have for subsequent cultural developments in each region will be discussed.

[47] Discussant

Alexander, Rani T. (Northern Illinois)

[73] **Site Structure at Isla Cilvituk, Campeche, Mexico: Implications for Inferences of Household Organization from the Archaeological Record.**

Results from the first season of archaeological survey at Isla Cilvituk, Campeche, Mexico, indicate at least two major episodes of occupation during the Terminal Classic through the Late Postclassic periods (A.D. 900–1540). The occupation episodes are marked not only by differences in construction techniques but also by changes in the spatial configuration of residential structures, nonresidential structures, and ancillary features. Analysis of these patterns prompts a consideration of how the organization of production, consumption, an reproduction within coresidential social units, or households, may be linked to spatial and temporal variation in archaeological units at several scales of analysis.

Allen, Gene (Minnesota)

[44] **Setting Institutional Priorities That Foster Public Education**

Summarizes programs supported by the University of Minnesota that are designed to foster public outreach activity among university faculty. In addition, information is provided on the national-level outreach initiatives recently undertaken by a consortium of research universities.

Allen, Kathleen M. S. (Pittsburgh)

[46] **Seneca Iroquois Ceramic Variability**

Comparison of ceramics from Seneca Iroquois sites with those from other Iroquoian groups has been hampered by questions regarding the comparability of ceramic samples obtained from different contexts. Most pottery available for study from historic Seneca Iroquois sites is derived from burial contexts. In contrast, ceramics from domestic context are much more common elsewhere. Pottery from both contexts at the Seneca site of Factory Hollow are compared to identify patterns of variability. The implications for intertribal comparisons of ceramic material are explored.

Allen, Mark W.

[15] **Economic Power, Warfare, and Labor in Simple Chiefdoms: Hillforts in Hawke's Bay, New Zealand**

Analysis of labor investment in Maori fortifications (pa) permits examination of sociopolitical organization in prehistoric Hawke's Bay. Simple chiefdoms characterized by settlement hierarchy and some degree of centralization developed in this region around 400 to 300 B.P. Populations participated in these formations despite increased labor costs in order to ensure subsistence requirements, and for protection from raids or warfare. Pa were key components of this process as they secured resources, residences, and stored food. Pa also functioned as sociopolitical centers which contained elite households. Ownership of land and pa are viewed as sources of economic power for Maori leaders.

Allen, Patricia E. (Appalachian State): [72] (see *Kimball, Larry R.*)

Allen, Thurman (Soil Conservation Service): [129] (see *Saunders, Joe*)

Allsbrook, R. Colby (Alabama)

[129] **Limestone, Grog, and Shell: An Intemperate View of Pottery Temper in the Tennessee Valley**

A partial excavation of the Red Fox Mound (1LI15), located on the Tennessee River near Decatur, Alabama, revealed a rectilinear structure with ten sequent building episodes. The question of mound authorship was confounded, however, by the discovery of "index" ceramics from both Woodland and Mississippian stage cultures in each of the ten building layers. A subsequent test of mound proximal village debris revealed a similar admixture of ceramics in a single undisturbed and sealed deposit. This paper discusses these findings and questions traditional assumptions about the use of ceramic temper as an indicator of cultural affiliation in the Tennessee Valley.

Ambrose, Stanley H. (Illinois-Urbana/Champaign): [18] (see *Schober, Theresa M.*)

Ambrose, W. (University of Auckland): [61] (see *Stevenson, Chris*)

Amick, Daniel S. (Desert Research Institute, Reno)

[116] **Folsom Diet Breadth and Land Use Patterns**

The organization of Folsom subsistence and technology was structured largely by *Bison antiquus* hunting. However, close examination of diversity in Folsom faunal evidence and land use patterns indicates regional variation in subsistence and settlement strategies. Non-bison animal species were taken in inverse proportion to body size suggesting some dependence on opportunistic foraging. Contrasts in Folsom land use patterns are related to environmental variation in resource structure and availability. Although Folsom bison hunting represents a specialized subsistence strategy, considerable evidence also shows Folsom groups are responding to regional patterns of resource variation.

[28] (see *Mauldin, Raymond P.*)

Amorosi, Thomas (Hunter)

[101] **Archaeological Investigations at the Svalbard Site in Northeast Iceland**

Archaeological investigations at Svalbard are focused upon eight centuries of life in northeastern Iceland. Although research on site materials is still underway, a rich and varied set of data concerning human response to climatic change can be illustrated. Multiple signatures in Svalbard's artifactual and faunal data indicate that northeast Iceland experienced a particularly stressful period during the climatic event now described as the Little Ice Age. These "hard times" signatures are consistent with historic Icelandic annals, pointing to how farmers at Svalbard attempted to draw upon an increasingly wider range of resources during the 17th to 18th centuries.

Amundson, Ron (California-Berkeley): [131] (see *Jahren, Hope*)

Anderson, David G. (National Park Service)

[134] **Research Questions and Issues in the Paleoindian Theme Study**

The NHL Theme Study provides the opportunity to pull together a tremendous amount of technical and resource management information, enabling the profession to evaluate where we are and where we are going with Paleoindian research at the continental level (since the study will involve coordination with colleagues and institutions in Latin America and Canada). The examination of research issues is an essential part of the development of a national-scale historic context useful for the identification and evaluation of potential Landmark properties. Examining how colonization proceeded amid dramatic changes in climate and biota offers a framework for organizing this effort.

[48] Discussant

Anderson, Lisa M. (New York State Museum)

[46] **Ritual History of an Early Woodland Mortuary Site in New York**

Cultural traditions associated with the Vine Valley site in central New York state provide a unique opportunity to explore the role of past events in the historical trajectory of a ritual place. Used for mortuary purposes during the Early Woodland period, this area later was incorporated into historic Seneca Iroquois tradition as a place of discord and death. Skeletal material recovered in 1922 displays taphonomic differences and mortuary data show a variety of burial practices which may be interpreted as representing real or symbolic connections between two or more temporally distinct ritual episodes.

Anderson, Mark L. (Iowa)

[83] **Lithic Procurement and Reduction at Several Sites in the Lower Iowa River Valley, Louisa County, Iowa**

During the 1992-1993 field seasons, several associated sites which relate to lithic procurement and reduction activities were identified in the Lower Iowa River valley. Site 13LA412 represents a lithic

procurement location where Burlington chert was extracted from bedrock exposures. The prehistoric component at 13LA413 represents an associated lithic reduction location, temporally related to the Early and Middle Woodland periods. These and several other sites in the immediate vicinity contain the potential for additional research within not only the Lower Iowa but also the Upper Mississippi River valleys on various topics, including cultural affiliation, site activities and functions, settlement systems, and cultural history in a regional context.

Anderson, Patricia K. (Chicago)

[114] **Polity and Cosmos: The Manifestation of Power in the Periphery**

Recent archaeological, epigraphic, and iconographic investigations at Yula, a small site near the ancient center of Chichen Itza, suggest that it was important in maintaining the southern boundary of the Chichen Itza polity. The hieroglyphic inscriptions and iconographic themes of Yula appear to demonstrate a strong relationship between the periphery and center. The ideological relationship between kinship, politics, and power are framed within their cosmological context.

Andrefsky, William (Washington State)

[133] **Raw Material Characteristics and the Shaping of Stone Tool Technology**

Archaeological data sets representing over 100 different sites in western North America are examined to show that lithic raw-material quality, abundance, shape, and size play a major role in hunter-gatherer decisions to make various kinds of stone tools. These characteristics of lithic material occurrence are used to help explain why expedient technologies such as bipolar tool production are sometimes used, and why formalized technologies such as bifacial production may be selected as a tool production strategy. Stone tool morphological variability and technological variability are shown to be directly related to the geological characteristics of stone tool raw materials.

Andrews, Anthony P. (South Florida): [130] (see *Dahlin, Bruce H.*)

Andrews, George F. (Oregon)

[130] **The Nunnery (Monjas) and other Large Quadrangles at Uxmal: Elite Residential Compounds or Civic/Ceremonial Complexes?**

The Nunnery Quadrangle, and five other large quadrangles at Uxmal, are examined with reference to their possible functions. It has been assumed that large Maya "palaces" served as residences for the elite class. Based on a combination of data from building form and organization, room/doorway types, architectural iconography, and presence (or absence) of *chultuns*, it now appears that many of the large palaces at Uxmal, most of which are parts of large quadrangles, housed civic/ceremonial rather than residential functions. This produced a huge "civic center" surrounded by smaller residential buildings and complexes, creating a true multifunctional urban core area.

Angelini, Mary Lee (Boston) and *Patricia A. McAnany* (Boston)

[50] **Tamales and Atole: Accruing Status in the Maya Formative**

Paintings on Classic-period Maya polychrome vessels indicate that food played a central role in many social interactions. Analysis of Formative-period ceramics from K'axob, Belize, reveals that the social use of food originated in the Preclassic. Data are presented which indicate significant changes over time in ceramic clay sources, formation techniques, and vessel size. We infer that these changes are a response to the expanding role of food prestations which enhanced the status and prestige of the hosting group and its leaders.

Anikovitch, Michael (Institute of Material Culture History, St. Petersburg, Russia): [97] (see *Bradley, Bruce A.*)

Anschuetz, Kurt (Museum of Anthropology, Michigan)

[93] **Two Sides of a Coin: Early Pueblo Indian Farming Practices in the Rio Arriba and the Rio Abajo of the Northern Rio Grande Region**

During the Classic period (A.D. 1300-1600), Tewas in the Chama district and Keresans in the lower Jemez valley used a variety of field technologies and planting strategies to produce crops in the difficult climate of the northern Rio Grande. Even though these Pueblo farmers often relied upon similar methods to harvest and conserve water, Tewas in the higher Rio Arriba and Keresans in the lower Rio Abajo confronted markedly different temperature regimes. Whereas Tewas appear to have been qualitatively more dependent upon winter moisture to grow crops within a shortened frost-free season, Keresans had a greater reliance on summer precipitation.

Anthony, David (Hartwick): [77] (see *Olsen, Sandra L.*)

Antonellis, Anthony J. (U.S. Navy)

[29] **Plundering the Peninsula: Prosecution of Civil War Artifact Traffickers**

The United States Attorney for the Eastern District of Virginia recently prosecuted two major ARPA cases. The first case involved three North Carolina men travelling to the National Civil War Artifact Show in Richmond, Virginia. En route, they stopped at Colonial National Historical Park where they excavated more than 250 holes, removing over 200 Civil War artifacts. In the other case, artifacts taken from two Civil War shipwrecks were sold in interstate commerce by four Virginia men. This paper will highlight the scope of the Civil War looting and trafficking network using the above cases as examples.

Anyon, Roger (Zuni Heritage and Historic Preservation Office) and *Peter T. Noyes* (Navajo Nation Historic Preservation Department)

[67] **Are We Doing Right-of-Way Archaeology the Right Way?**

Archaeologists frequently berate agencies for not permitting excavation outside a right-of-way citing the need for more data to provide interpretive context for materials excavated within the right-of-way. Tribes, agencies, and sponsors, however, see a need for project completion with minimal impact to archaeological resources. If archaeologists truly wish to protect and conserve the archaeological record they should restructure their theoretical views of right-of-way archaeology. A nonsite landscape approach would resolve the interpretive context dilemma and meet the tribal, agency, and sponsor's goal of maximum protection and conservation for the resource.

Anyon, Roger (Zuni Heritage and Historic Preservation Office) and *Catherine Cameron* (Advisory Council on Historic Preservation)

[48] **Finding Creative Solutions for Restructuring American Archaeology**

Recent legislation and serious fiscal austerity are having dramatic effects on the conduct of archaeology in the United States. As federal and state budgets shrink, archaeologists are expected to produce more with less funding, while recent and proposed legislation offers Native Americans a far greater voice in the conduct of archaeology. These changing conditions challenge all of us with an interest in the past to develop creative ways to ensure protection and wise treatment of our cultural heritage.

Aperlo, Peter E.

[55] **Crude But Effective: Stone Tools and Household Production in Early Bronze Age Thy, Denmark**

This paper tackles issues about wealth finance of an elite from the household level. The lithic assemblage from a Danish Early Bronze Age settlement is subjected to microwear analysis in order to articulate the correlation among worked materials, actions performed, and tool morphology. It is by assessing these basic relationships of form and function that questions concerning specialization and control of production for exchange can begin to be addressed on a regional level.

Arkush, Brooke (Weber State)

[43] **Initial Results of Excavations at the Rock Springs Bison Kill Site, Southeastern Idaho**

The summer of 1994 marked the first year of excavations at the Rock Springs Bison Kill Site within the Curlew National Grassland, southeast Idaho. The site contains both a Fremont and Shoshone component, and promises to add considerably to our understanding of communal large-game hunting in the northern Great Basin. Research topics to be discussed include site structure, seasonality, butchering patterns, and absolute dating of the bone beds.

Ardren, Traci (Yale): [114] (see *Freidel, David A.*)

Armit, Ian (Historic Scotland)

[81] **Settlement and Society in the Scottish Iron Age**

This paper will review research in the Scottish Iron Age over the past twenty years. It will discuss how the strategies employed in the Scottish rescue archaeology programme and by other workers in the field have contributed to our present understanding of the nature of social development in Scotland, particularly the north and west of the country, from c. 600 B.C. to c. 800 A.D. The limitations of the work carried out to date will be considered and an attempt made to identify the key areas for future research and the ways in which these might be tackled.

Arnold, Bettina

[27] **The Archaeology of Gender in Iron Age Europe**

The study of prehistoric Europe continues to be simplified in favor of a male-dominated worldview. The interpretation of high-status female burials has been particularly plagued by gender bias, since such graves imply that women in these societies achieved positions of social and economic power. Changing burial customs and grave good inventories, as well as documentary evidence from the Mediterranean, indicates that gender relations were affected in significant ways during the early Iron Age. The social changes which accompanied the late Hallstatt/early La Tène transition cannot be

understood without reference to gender, as this paper will demonstrate.

Arnold, Jeanne E. (California-Los Angeles)

[20] **Socioeconomic Contexts of Specialized Shell Working Industries in Southern Insular California**

Of the New World shell working industries, the mass production of *Olivella* shell beads on California's northern Channel Islands is among the most monopolistic, spatially concentrated, specialized, and intensive. This industry is described in several recent publications; this paper highlights aspects of the industry and presents new data on related, smaller-scale activities. The Island Chumash, among the world's most complex hunter-gatherers, were skilled manufacturers of shell ornaments and fishhooks, *Tivela* adzes, and beads of *Mytilus*, *Haliotis*, *Tivela*, etc. Contexts of production, implications for social and labor organization, and the chronological sensitivity of a range of shell artifact types are discussed.

Arsenault, Daniel (Célat, Laval)

[53] **On His Majesty's Sacred Service: The Male Ritual Stewardship in Moche Society.**

A significant part of the Moche iconography depicts a wide range of actions related to various ritual contexts. A detailed analysis of this iconography suggests that many rites were performed by different groups of male ritual actors. Though it is often stated that Moche society was hierarchically structured, previous interpretations about these groups have never clearly expressed this social complexity. This paper uses a contextual approach to define a "class" of male ritual actors, that I call the "Stewards," who served the Moche political and religious elites during the performance of major ritual activities.

[46] (see *Watchman, Alan*)

Artz, Joe Alan (Iowa)

[33] **Rodent-Induced Size Sorting of Archaeological Deposits in Southeastern Iowa**

Evidence of pocket gopher burrowing is common in many Midwestern soils, particularly in sandy soils formed under prairie vegetation. Archaeologists studying heavily bioturbated sites in California have proposed that pocket gopher burrowing results in significant size sorting of artifacts within soil. Similar size sorting effects are recognized in archaeological data from the Mississippi River valley of southeastern Iowa. The extent of bioturbation, however, varies with environmental variables including vegetation, soil parent material, and rates of geological deposition. Data on rates of bioturbation are suggested by depth distributions of intrusive historic materials.

Arvelo, Lilliam (Pittsburgh)

[127] **Patron de Asentamiento y Organización Social Durante el Primer Horizonte Pintado, Nuevas Evidencias del Valle de Quíbor, Venezuela**

Investigaciones recientes en el Valle de Quíbor, Venezuela, han arrojado nuevas luces sobre el patrón de asentamiento y formas de organización social de los grupos humanos que elaboraron la alfarería denominada Tocuyanoide en Venezuela, o Primer Horizonte Pintado en Colombia. En este trabajo presentaremos un análisis de la evidencia existente referente a patrones de asentamiento, tanto en Venezuela como en Colombia sobre los grupos asociados a este horizonte estilístico, y lo contrastaremos con los datos recabados para del Valle de Quíbor.

Arzigan, Constance (Mississippi Valley Archaeology Center)

[33] **Horticultural Systems of Western Wisconsin's Woodland Period**

Extensive paleoethnobotanical analyses from Early through Late Woodland sites in Western Wisconsin are integrated with a series of diet optimization models to document the gradual incorporation of cultivated plants into the economy. The sequence in which plant species are added to the diet may reflect a compromise between optimal nutritional benefits and the need for an abundant and storable food crop. As societal needs change, particularly with increased population, different species are adopted, culminating with corn.

Athanassopoulos, Effie (Nebraska)

[12] **Landscape Archaeology in the Medieval Mediterranean: Intensive Agriculture and Rural Settlement**

Archaeological regional surveys in the Mediterranean have been instrumental in providing a new perspective and a strong empirical base on which interpretation of the prehistoric as well as the historic rural settlement patterns can be based. These advances have led us away from "traditional" analogies that have served as interpretive models in the past. In several recent studies, dealing with New and Old World material, dispersed settlement has been associated with an intensive agricultural regime. In this paper this issue is examined in the context of the medieval Mediterranean and particularly Greece, using both archaeological data and historical documentation.

Athens, J. Stephen (International Archaeological Research Institute)

[112] **Prehistoric Land Use and Occupation in Fluvial and Interfluvial Areas of the Western Amazon: Sediment Cores from the Ecuadorian Oriente**

Sediment cores placed along a road transect south of the Napo River in Petroecuador's Block 16 have produced significant results for the documentation of prehistoric human occupation and land use within the Ecuadorian Portion of the Western Amazon. Analyses focus on radiocarbon-dated sediment, pollen, and particulate charcoal sequences. Attention is also given to the evaluation of the stability of the climate and geomorphology of this region and their relation to the archaeological record.

Aufderheide, Arthur C. (Minnesota-Duluth): [49] (see *Langsjoen, Odin M.*)

Aveni, Anthony (Colgate): [52] (see *Dowd, Anne S.*)

Awe, Jaime (Trent): [64] (see *Conlon, James*)

Awe, Jaime J. (Trent), *Paul F. Healy* (Trent), and *Christopher M. Stevenson* (Archaeological Services Consultants)

[37] **Preclassic Maya Obsidian in the Belize Valley**

Preliminary analysis of obsidian artifacts from well-dated contexts at the Maya centers of Cahal Pech and Pacbitun in western Belize reveals an exclusive reliance on the El Chayal obsidian source during the early facet (1000–650 B.C.) of the Middle Preclassic period. During the late facet (600–400 B.C.), obsidian from the San Martin Jilotepeque (Rio Pixcaya) source began to appear. By the Late Preclassic period (400 B.C.–A.D. 250), these two Belize Valley region centers were acquiring obsidian from the three major highland Guatemalan sources (El Chayal, Ixtepeque, and San Martin Jilotepeque). Site contexts, and details of analysis, for the obsidian from Cahal Pech and Pacbitun are provided, and compared with previously published Preclassic obsidian data from the Maya lowlands.

Ayres, Gregory (Pittsburgh): [89] (see *Rollins, Harold B.*)

Baker, Barry W. (Texas A & M): [9] (see *Collins, Michael B.*); [135] (see *Dockall, Helen Danzeiser*)

Baker, Brenda J. (New York State Museum) and *Maria A. Liston* (Adirondack Community College)

[14] **War Is Hell: Eighteenth-Century Military Remains at Fort William Henry**

Fort William Henry, in Lake George, New York, was the scene of the French and Indian War massacre made famous in *The Last of the Mohicans*. Skeletal remains of 30 men, ranging in age from 14 to 45 years, were removed from display and storage in 1993. These remains reveal evidence of battle trauma (including a decapitation), physical overexertion arising from repetitive stress and loading, and infection (including tuberculosis), indicating that life at Fort William Henry between 1755 and 1757 was extraordinarily difficult. Analysis of the skeletal material supplements historical accounts, providing details of life in an eighteenth-century military encampment that are otherwise unavailable.

Bakken, Kent (Minnesota)

[83] **An Overview of Lithic Raw Material Resources in Minnesota**

Much of Minnesota is covered with glacial till, a factor that complicates raw material studies. The till is an expensive, homogenous source of marginal quality materials. Some materials are also available from localized bedrock outcrops. Based on geological considerations, it is proposed that Minnesota has three lithic raw materials resource regions, each with different materials and types of sources. An analytical context based on regional context is proposed. Emphasis is placed on characterizing and contrasting lithic assemblages rather than identifying individual artifacts. The interplay of local and nonlocal raw materials is also examined in the context of prehistoric subsistence economies.

[83] (see *Malik, Riaz*)

Balkansky, Andrew (Wisconsin-Madison)

[86] **Pottery Production at the Ejutla Site, Oaxaca, Mexico**

This paper documents pottery production at Ejutla, and considers the organization and scale of this craft specialty. Many of the commonly used indicators of pottery production were present: high densities of potsherds, wasters, figurines and figurine molds; in addition, the excavations uncovered several semisubterranean kilns. This research into pottery technology and its products shows variable

firing technologies in Classic period Oaxaca; and, for the ceramics, variable spatial distributions. Taken together, these data indicate small scale production and local consumption (though beyond the household), in a multicrafting context.

Ball, Stephen (Indiana)

[14] **Geophysical Remote Sensing and the Interpretation of Subsurface Features**

The detection and interpretation of individual subsurface features has been the goal of geophysical remote sensing in archaeology. The application of these techniques has focused primarily on large complex sites, especially those with urban planning. Extensive testing of magnetic and resistivity surveys on a variety of sites throughout the American Midwest has produced a body of data relating to appropriate surveying strategies for prehistoric sites in Eastern North America. Questions of sample interval, environmental effects, cross-referencing of survey results and the interpretation of subsurface features will be addressed.

Bamann, Susan (Butler)

[14] **Settlement Nucleation in Mohawk Iroquois Prehistory**

A Mohawk Iroquois settlement sequence is used to address the role of warfare in settlement nucleation. Mohawks shifted their numerous semipermanent settlements from open hilltops to a fewer number of isolated and defensible locations. Ceramic seriation and diversity analysis, population estimation, and evaluation of site hierarchy for a Mohawk site cluster indicate that nucleation was rapid and deviates from the patterns predicted by a traditionally accepted escalating warfare model. Interpretations support the pursuit of broader models that incorporate subsistence stress along with increasing conflict.

Bamforth, Douglas B. (Colorado)

[103] **Variable Responses to Late Paleoindian/Early Archaic Environmental Change on the Great Plains**

Paleoenvironmental research on the Great Plains indicates that the early Holocene was marked by steadily increasing aridity, culminating after 8000 B.P. in the Altithe thermal climatic interval. Although Paleoindian (pre-8000 B.P.) ways of life on the Plains show a considerable degree of regional uniformity, the available archaeological data suggest that hunter-gatherer groups in different areas of the Plains responded to the Altithe thermal in very different ways, resulting in widely varying Early Archaic adaptations. This paper considers the theoretical implications of this pattern.

Bampton, Matthew (Southern Maine): [14] (see *Hamilton, Nathan D.*)

Bandy, Matthew S. (California-Berkeley)

[99] **The Early Ceramic Periods of Moquegua: A Reappraisal**

Settlement survey in the Moquegua Valley has produced new evidence regarding its earliest ceramic periods: Huaracane and Trapiche. Huaracane habitation sites are small villages regularly spaced along the floodplain margins. Two varieties of Huaracane funerary complexes are identified. Tumulo cemeteries, though distinct from habitation sites, are evenly spaced along the valley margins. "Boot tomb" cemeteries usually occur with Middle Horizon complexes, suggesting that this funerary practice is relatively late. As Trapiche ceramics are generally encountered in Huaracane cemetery contexts, the Trapiche phase should be understood as a Huaracane subphase characterized by the local importation or imitation of altiplano materials.

[11] (see *Hastorf, Christine*)

Banker, Sherman (Wisconsin-Madison): [130] (see *Kepecs, Susan*)

Banks, Kimball M. (Bureau of Reclamation): [110] (see *Snortland, J. Signe*)

Banks, Larry (Southern Methodist): [9] (see *Stanford, Dennis*)

Banks, William E. (Kansas) and *Anta Montet-White* (Kansas)

[16] **Spadzista, Loci E and F: Flake and Blade Dorsal Pattern Analysis and Comparison with Other Gravettian Assemblages**

Spadzista is a Gravettian site located in Krakow, Poland. This analysis focuses on areas of the site (E and F) excavated in 1989 by a joint Jagiellonian/University of Kansas team. Intrasite variability in lithic reduction strategies is evaluated to test the idea that spatially segregated activities were recorded in the site's deposits. Several blade and flake attributes are considered in the analysis. The Spadzista samples are then compared to other assemblages in the hopes of understanding the diversity of Gravettian adaptations in North-Central Europe.

Banning, E. B. (Toronto)

[95] **Settlement Shifts and Site Visibility: Where are the Late Neolithic Sites?**

Not long ago, many researchers viewed the end of PPNB as a regional abandonment. Others accounted for the relative dearth of Late Neolithic sites, especially in the eighth millennium B.P., by depression in population or by the adoption of pastoral nomadism. Evidence that many small farmsteads of the Late Neolithic may lie undetected in Wadi Ziqlab and elsewhere suggests that none of these hypotheses is realistic.

Bar-Yosef, Ofer (Harvard)

[84] **Natufian Hamlets to Early Neolithic Villages: The Emergence of Social Hierarchies**

Archaeological evidence for site size, house size and proximity, and burials enables us to trace the emergence of social complexity in the Neolithic of the Levant. While Natufian hamlets are small, with adjoining round dwellings, the burials lack evidence for social stratification. Large Early Neolithic villages accommodated entire biologically viable populations. Houses are isolated and mortary practices indicated differential treatment between adults and juveniles. Population growth, facilitated by a new economy, led to social changes that are also reflected in mobiliary art. The emergence of villages in the Levantine corridor represents a major socioeconomic change when compared to small contemporary desertic camps.

Barfield, Lawrence (University of Birmingham) and **Christopher Chippindale** (Cambridge University)

[76] **Meaning in the Later Prehistoric Rock Engravings of Mont Bego, Maritime Alps**

The petroglyphs of Mont Bego, on the high mountain of the French-Italian border, are uncertainly dated and have no local archaeological context. Nevertheless, by noting their distinctive and repetitive iconography, and by relating this to regularities in North Italian archaeology of the early metal age, we can recover the essence of their meaning and their place in social reproduction and gender relations.

Barker, Gary L. (Tennessee Division of Archaeology): [87] (see *Broster, John B.*)

Barker, Pat (Bureau of Land Management)

[80] **Archaeology in the Integrated Resource Management System**

In the Federal resource management system, archaeology has had a dual role; both resource to be managed and resource to be protected. Historically, the latter role has dominated resource management. However, by its very nature, archaeology approaches understanding behavior by integrating the human and natural environments. Thus, archaeologists are in a unique position to provide integrated resource managers with very long-term insights into human interactions with and modifications to the environment. Fully realizing this potential requires a change in management so that archaeology becomes a fully integrated part of the direct management of the environment.

Barner, Wendell (ICF Kaiser) and **Wendy Goodman** (Tennessee)

[69] **Karst Features and Their Association on Aboriginal Cultures of Northern Guam**

Previous archaeological and geological explorations at Tarague Beach, Territory of Guam, Marianas Islands were limited to the immediate beach strand. In 1992, the first and second terraces were investigated to determine if cultural resources relating to the prehistoric occupation were present. It was discovered that concentrations of cultural material were present in conjunction with water bearing karst features, suggesting that freshwater availability and aboriginal settlement in this dry, isolated region are intrinsically associated. This paper presents a description of these associated resources, and generally discusses the significance of this relationship to the settlement pattern for northern Guam.

Barrett, Thomas (New Mexico)

[82] **Differential Specialization and Gulf Coast Obsidian Production: The View From the Tuxtla Mountain Region**

The continuing controversy over the identification of Mesoamerican centers as specialized stone tool production loci is examined from a "consumer" zone on the South Gulf Coast. Obsidian artifacts from the Tuxtla region, Veracruz, Mexico, are examined to shed light on the production intensity and scale of a production-distribution system assumed to be dominated by Teotihuacan during the Middle Classic period. Debitage analyses utilizing sourcing studies, technological attributes, and categories of use wear, are contrasted within the Tuxtla region to assess the differential regional procurement, production, and distribution of imported obsidian. The implications of the Classic obsidian industry are discussed.

Barrionuevo A., Mónica (Universidad Pontificia La Católica, Lima)

[99] **Dieta o Ritual: Funcion de los Moluscos en una Colonia Tiwanakense, Sitio de Omo, Valle**

de Moquegua, Peru (Diet or Ritual: The Function of Shellfish in a Tiwanaku Colony, Omo Site, Moquegua Valley, Peru)

La presencia de moluscos en comunidades de la elite Tiwanakense en el valle Medio de Moquegua (extremo sur del Perú), nos lleva a cuestionarnos sobre el papel que cumplieron éstos dentro del complejo sistema de control estatal y de intercambio con la Costa que tuvo el Estado Tiwanaku en el momento de su máxima expansión. La reducida presencia de moluscos en los contextos excavados en el Complejo Omo, así como la preferencia por dos especies casi exclusivas (*Choromytilus chorus* y *Oliva peruviana*) sugieren alternativas que no sólo estarían asociadas a problemas alimenticios, sino a un manejo de recursos para uso de una elite dirigente y/o contextos rituales.

The presence of mollusk remains in Tiwanaku communities of the middle Osmore, or Moquegua Valley, Peru, brings to question the role of shellfish within Tiwanaku's system of state control, and the role of coastal exchange at the moment of the Tiwanaku state's maximal expansion. The limited presence of shell in excavated Tiwanaku contexts at the Omo site and the near-exclusive preference for two species (*Choromytilus chorus* and *Oliva peruviana*) suggest the management of resources for the use of ruling elites or for ritual purposes, as possible alternatives to a significant subsistence contribution.

Bartam, Laurence (Franklin and Marshall): [62] (see *Hitchcock, Robert K.*)

Barton, C. Michael (Arizona State) and **G. A. Clark** (Arizona State)

[22] **A Selectionist Model for Information Exchange in Late Pleistocene/Early Holocene Europe**

Temporal and spatial variation in the incidence of "art" in the European Upper and post-Paleolithic can be explained by the intensification and subsequent relaxation of selective pressure affecting the volume of information flow through alliance networks as a response to changing population densities in the various European subregions from the Pleniglacial through the early Holocene. We develop a model of cultural selection for symbolic behavior that incorporate the 'information exchange' theory of style and proceeds from and parallels natural selection in classic neo-Darwinian evolutionary theory.

Barut, Sibel (Illinois)

[57] **Raw Material Use in the Later Stone Age at Lukenya Hill, Kenya**

This paper examines strategies for the procurement and use of quartz, chert, and obsidian lithic raw materials at the early LSA sites of GvJm 10, 16, 19, 22, 46, and 62 from Lukenya Hill, Kenya, and their implications for hunter-gatherer land and site use during the period.

Bass, Jason (California-Berkeley)

[31] **Tracing Long-Distance Exchange to its Origin: Sourcing Flints in Northeastern Bulgaria**

Stone tools manufactured from high quality Bulgarian flints have been recovered from Eneolithic sites throughout the Balkans. Determining the specific sources of these flint artifacts would greatly increase our understanding of regional and long-distance exchange networks in southeastern Europe. Yet almost no progress has been made in this area; in fact, many archaeologists make interpretations based on unfounded guesses about lithic raw material provenience. This paper explores why the necessary sourcing legwork has not yet been done, and then outlines a strategy for the location and geochemical characterization of prehistoric flint quarries in northeastern Bulgaria.

[79] (see *Near, Julie*)

Bauer, Brian S.

[53] **Inca Land Tenure in the Cusco Region**

This paper examines possible associations between pre-Hispanic systems of land tenure in the Cusco region and the ceque system. Special issues which will be addressed include 1) the relationship between the geographical distribution of pañacas and ayllus in the Cuzco Valley and the course of the ceques which they maintained, and 2) the role of huacas as land and water markers for different kin groups. The findings indicate that many of the huaca locations, and perhaps the radial form of the ceque system, can be linked to concerns of land and water control by the many kin groups in the Cuzco Valley.

Bayman, James M. (Smithsonian)

[20] **Hohokam Shell Ornament Production, Consumption, and Community Organization**

This study outlines an analysis of shell ornament manufacture, consumption, and discard in a Classic period (ca. A.D. 1100-1300) Hohokam platform mound community. Although the nearest source for marine shell in the Sonoran Desert (Gulf of California) is over 200 km southwest of the Hohokam 'heartland,' raw shell, production debris, and finished ornaments are commonly found on large sites. Widespread evidence of shell ornaments in a variety of contexts (e.g., houses, middens,

burials) indicate that such goods played an essential role in Hohokam society. The relevance of this research to interpretations of Hohokam economy, ceremony, and political organization is considered.

Beard, Tom (Landmark Archaeological/Environmental Services): [14] (see *Glascoek, Michael D.*)

Beaverson, Sheena K. (Illinois): [59] (see *Hajic, Ed*)

Bech, Jens Henrik (Thisted Museum)

[55] **Excavating Bjerre: Bronze Age Settlement from the Chiefdom of Thy**
Archaeological rescue work by the Thisted Museum combined with the Thy Archaeological Project have given new details about land use, settlement patterns and farming areas of the Bronze Age. Due to outstanding preservation we recovered large quantities of bone, amber, and bottoms of house construction posts complete with axe marks. From this evidence, unparalleled in Denmark, we can demonstrate the new exploitation of wetlands for agriculture and cattle raising by isolated farms scattered throughout the Bronze Age landscape.

Bech, Louisa (Thisted Museum) and *Deborah Erdman* (California-Los Angeles)

[55] **Ceramic Communication and Technology: The Shifting Ceramic Industry of Thy**
The shift in the ceramic production and use from the Late Neolithic to the Early Bronze Age suggests new control over technology and forms of symbolic communication conveyed in a society. The ceramic assemblage of the Late Neolithic has two ornate decorative types, both found in the average household. The technology is consistently mediocre, with most vessels poorly fired. In the Early Bronze Age there is a shift to extremely well produced and fired vessels and a complete absence of the decorative forms. There remains, however, a category of vessels of much poorer quality. These changes fit into the larger picture of shift, both functional and ideological, of the ceramic vessels in Early Bronze Age chiefdoms of Denmark.

Beck, Charlotte (Hamilton)

[123] **Style, Function, Technology, and Chronological Units**

For many years "temporal types" have served as chronological units in relative dating, central to the methods of seriation and typological cross-dating. Archaeological theory suggests that valid historical types organize stylistic variation, and yet in practice useful chronological units often include function and technological attributes. Using projectile points from the Great Basin as a test case, I explore the theoretical basis for constructing chronological units based on function and technology as well as style.

Beck, Lane (Florida Museum of Natural History) and *April Sievert*

[10] **Power From the Dead: Ritual Modification of Human Remains**

Mortuary analysis is built on the basic concept that burial of the dead occurs. However, in many societies past and present, modifications and curation of some portion of the remains of certain individuals is evident. This paper serves as a preliminary review of the ethnohistorical and archaeological reports of cultural modification of human remains and examines how these practices relate to communal beliefs about death and of the patterning of mortuary practices.

Beck, Margaret E. (Kansas) and *Sean Brennan*

[45] **The Issue of Mississippian Trade Ware in the Central Plains Tradition Shell Tempered Ceramics in Smoky Hill Sites in Kansas**

Trade during the Middle Ceramic period between the Central Plains and Caddoan and Middle Mississippian groups has long been recognized. This paper will examine this issue through analysis of the shell-tempered pottery found in Smoky Hill sites in Kansas. These shell-tempered ceramics have been traditionally assumed to represent trade from Steed-Kisker, a focus of western Middle Mississippian. This assumption is tested using both design comparison and petrographic analysis. It is a possibility—though a frequently overlooked one—that this pottery is of local manufacture and reveals outside influence, or that this pottery represents trade with a Mississippian group other than Steed-Kisker.

Becker, Marshall (West Chester)

[76] **Etruscan Gold Dental Appliances: Changing Female Roles in Etrurian Cities Absorbed by the Roman State**

Gold dental appliances recovered from archaeological sites in central Italy provide clear evidence for the primacy of Etruscan "orthodonture" ca. 650 B.C. These devices, serving no masticatory function, were used only by Etruscan women. This gender specificity suggests that cosmetic use was the primary intent. This correlates with the ancient literature which describes the public presence and the roles of Etruscan women, that were quite distinct from those of the Romans. Temporal and spatial distribution indicates that the use of these gold dental appliances came to an end during the

first century A.D., a period when the Roman state had culturally absorbed their near neighbors, reflecting an earlier political annexation into the Roman state.

Beckman, Kristen (Skelly & Loy): [14] (see *Duncan, Richard B.*)

Beekman, Christopher S. (Dumbarton Oaks)

[21] **The El Grillo Complex of Central Jalisco: Teotihuacan Expansion or Epiclassic Movements from the Northern Frontier?**

The controversial El Grillo complex of central Jalisco has been the linchpin for attributing a number of intrusive complexes throughout western and northern Mexico to a Middle Classic, Teotihuacan-centered empire or world system. The architecture, ceramics, and burial complex are reevaluated and found to date instead to the Epiclassic (A.D. 600–900). The complex is proposed to reflect population movements accompanying the general contraction of the northern Mesoamerican frontier at this time. The implications for the alternative chronology are discussed with particular reference to the collapse of the Teuchitlan Tradition of central Jalisco.

Belcher, William R. (Wisconsin-Madison)

[77] **Ethnoarchaeological Approaches to Fish Butchery: A South Asian Perspective**

Ethnoarchaeological research on fish butchery, amongst the mid-coastal fishing villages of Pakistan, has focused on two systems of processing: central-place and village-based. In central-place markets, fish are butchered using varying techniques dependent on mode of consumption (fresh vs. dried), species, size, and the consumer's socioeconomic affiliation. Village producer consumption and butchery focuses on a limited range of species and fish portions that vary slightly throughout the year. These intrasocietal variations are important in order to develop applicable models to explain variations seen across several sites of the Indus Valley Tradition (ca. 2,600–1,700 B.C.).

Belovich, Stephanie J. (Kent State)

[104] **Defensive or Sacred? An Early Late Woodland Earthwork in Northeast Ohio**

The Greenwood Village is an earthen enclosure on the bluffs overlooking the Cuyahoga River valley. The site was interpreted as a fortified village dating to the late Prehistoric Whittlesey period, but recent investigations date the site to the fifth through eleventh centuries A.D. and indicate a ceremonial function. A semipermanent occupation with special purpose features is associated with the earthworks. This site demonstrates that not all hilltop enclosures are defensive works, nor can they be assumed to date to the Whittlesey period. Further investigations at similar sites are needed to define more clearly the early Late Woodland period in northeastern Ohio.

Benallie, Larry and *Anthony L. Klesert* (both, Navajo Nation Archaeology Department)

[67] **Do We Study Cultural Properties or Corridors?**

The prehistoric "site" is a fundamental unit of management in historic preservation. The site as a whole is the historic property determined Register eligible, and the entire site is what is considered protected or impacted. The adverse effect of undertakings is a concept applied to these sites. All this is true except for excavations within linear rights-of-way, at which point policy replaces law and the unit of investigation becomes the corridor. The implications of this policy for management, preservation, and science are discussed with examples from an ongoing road project on the Navajo reservation.

Benavides, O. Hugo (CUNY-Graduate School)

[63] **The Emergence, Configuration, and Impact of Social Archaeology in Ecuador**

Ecuador has a long history of the field of archaeology from republican times to the present. In the last three decades a phenomenon of a more socially conscious archaeology strongly developed in the country. In this paper, I would like to access the significance of the social archaeology in Ecuador. Two of my major concerns will be to understand how the social archaeology relates to the initial developments of the discipline and what are some of its major contributions to this day.

Benco, Nancy L. (George Washington)

[40] **A Historical Model of Craft Production from the Medieval Islamic World**

For nearly 20 years, two interpretive frameworks have dominated archeological studies of craft production: 1) descriptive models identifying different "types" of artisan production, and 2) developmental models attributing specific causal factors to the evolution of craft specialization. These studies underscored the significance of craft production in ancient societies; identified a diversity of productive arrangements and their archeological implications; and examined their sociopolitical contexts. To move forward, however, archaeologists must refocus on the internal social structures that shaped productive activities and labor arrangements. This paper combines ethnohistoric, ethnographic, and archeological data to develop a historical model of craft production for the medieval Islamic world.

Bender, Susan E. (Illinois-Urbana/Champaign)

[121] **What's to Eat?: Identification and Analysis of Archaeological Fauna from Katmai National Monument, Southwestern Alaska**

Previously, archaeologists working on the southwestern coast of Alaska identified several cultural components and subsistence economies, including shifts between marine and terrestrial resources. These fundamental works focussed on lithic and organic technology for the identification of these subsistence practices. Recent archaeological survey and testing of the coast of Katmai National Monument provides the opportunity for systematic faunal collection from several sites ranging in age from approximately 7000-500 B.P. Work is currently underway on these collections which will allow researchers to further understand the exploitation of faunal resources by the prehistoric inhabitants of coastal Katmai.

Bender, Susan J. (Skidmore)

[44] **Public Education and Your Career in Archaeology**

Strategies for resolving potential conflict between professional advancement and public education activities.

[80] **Involving Professionals in Public Education**

Report on results of professional involvement work group from Breckenridge working conference.

Bender, Susan J. and Kerry Nelson (both, Skidmore)

[14] **Reconstructing Prehistoric Settlement in the Upper Hudson Valley, New York**

Systematic survey of a bounded region in the upper Hudson valley has yielded new information on prehistoric settlement systems in the area. Formal and functional analyses of avocational collections from 27 hitherto undocumented sites suggest the presence of two temporarily distinct settlement systems in the region, while debitage analysis of controlled surface collections seems to link this distinction to changing mobility patterns. Finally, the survey results call into relief the issue of poorly recorded Early to Middle Woodland settlements in the upper Hudson valley.

Bendremer, Jeffrey C. M. (Connecticut)

[93] **Food Production in Southern New England: Changing Strategies in Pre-Contact and Post-Contact Subsistence Systems**

Although maize horticulture is adopted in several areas of New England by about A.D. 1000, its place in the overall subsistence system varied profoundly throughout the region. An examination of archaeological subsistence data, ethnohistoric documentation as well as oral histories, gender roles, and environment reveals that a number of distinct strategies are present in the region and that these strategies change markedly after European contact. These strategies are described and the causes of geographical and temporal variation are discussed.

[71] (see *George, David R.*)

Bennett, Joanne L. and Walter E. Klippel (both, Tennessee)

[68] **Thermal Alteration of Subsurface Faunal Remains**

The presence of burnt bone in archaeological context is commonly attributed to direct exposure to fire. Replicative experiments have been conducted in which faunal remains were exposed to heat in both surface and subsurface contexts. Macroscopic comparisons suggest that bone burnt through exposure to indirect heat is not readily distinguishable from bone burnt by surface fires. Results have implications for even relatively short-term prehistoric occupations during which campfires could have been burned bones that had been buried hundreds, if not thousands, of years earlier.

Berg, Caryn M. (Colorado)

[54] **Selling Archaeology: Post-Processual Interpretations in Public Archaeology**

The post-processual approach in archaeology seeks interpretations that are "deeper than the measurable evidence." That is, post-processualists attempt to reach the thoughts of prehistoric peoples. Most professional archaeologists would agree that it is virtually impossible to objectively determine the "meaning behind the evidence." When speaking to the public, however, many professional archaeologists provide interpretations that seem post-processual in their very nature. Professionally, we recognize the need for objective interpretations, but we also appreciate the necessity of public interest and support. To that end, we present cognitive interpretations to the public in attempts to "sell" our discipline.

Bergman, Christopher A. (3-D Environmental), *John F. Doershuk*, and *Ken Duerksen*

[57] **Analysis of Lithic Technology: Old and New World Perspectives**

A consideration of prehistoric Old and New World lithic technologies reveals significant differences in flaking strategies. Old World technologies, like those of the European Upper Paleolithic, generally emphasize painstaking core preparation and blank production instead of protracted tool

manufacturing episodes. In the New World, the reverse is more often the case. Core reduction is usually expedient and the greatest effort appears directed toward production of tools like bifacial points and knives. This paper contrasts New and Old World analytical techniques used to study lithic assemblages by focusing on raw material procurement, manufacturing efficiency, intended function, and curation practices.

Berlando de Quirós, Federico (Universidad de León) and *Anne Pike-Tay* (Vassar)

[60] **Upper Magdalenian to Azilian Economic Transformations at La Cueva de la Pila, Cantabria, Spain**

Recent excavation and analysis of the cave of La Pila in the coastal zone of Cantabria is furnishing a detailed sequence of cultural and economic transformations from the Upper Magdalenian to the Azilian at the site. From a typological point of view the transition appears to be mozaic in character with Azilian points and harpoons appearing in clear association with Magdalenian ones during the Magdalenian. From an economic perspective, however, discontinuity is observed in that evidence for the exploitation of marine resources derive exclusively from the Azilian levels, and changes are evident in the pattern of seasonal exploitation of red deer. The technological and faunal evidence from La Pila is considered in light of settlement and subsistence models of the Late Pleistocene/early Holocene of Northern Spain.

Bermann, Marc (Pittsburgh)

[65] **Formative Period Settlement Hierarchy and Political Economy in La Joya, Oruro**

Settlement survey has revealed significant site-size differences in Wankarani settlements of the Formative Period (1800 B.C.-A.D. 400) in La Joya, Department of Oruro, Bolivia. Analysis of surface collections suggests that the largest site in the survey area was a center for the production of agricultural tools. This apparent functional differentiation between sites constitutes the first evidence that the site-size differences long noted in Wankarani settlement may reflect sociopolitical hierarchy.

[99] Discussant

Bernardini, Wesley (Arizona State)

[118] **Transitions in Social Organization: A Predictive Model for Southwestern Archaeology**

Constraints on information flow within a community may significantly affect the form of its decision making structure. Utilizing information theory and ethnographic data, a model is developed that predicts population thresholds at which profound changes in a decision making hierarchy should occur in order to preserve community integrity. These predicted thresholds are tested on archaeological data from the Anasazi region of the American Southwest. A correlation between observed and predicted points of reorganization is demonstrated, suggesting that future research into the behaviors of social negotiation (e.g. exchange, conflict, stylistic communication) is best directed to these "hot spots" of social activity.

Bertelsen, Reidar (University of Tromsø)

[101] **Arctic Northwest Europe from Iron Age to Middle Ages, from Prehistoric Communities to Peripheries at the Edge of the World**

Recent research has changed our picture of the Late Iron Age of the arctic coast of Norway. New perspectives on economic, social and ethnic relations have given a new background for interpreting the great changes of the Middle Ages when the northern coasts were also incorporated into the formative states, the Church and the European trade network. The erosion of the Iron Curtain has also changed the situation dramatically. It is now time to compare the early "europeanization" with the "russification" further east. This is not only a question of comparing two neighboring geographical regions, it also involves the confronting of two research regimes.

Beyer-Honca, M. Deirdre (Indiana)

[12] **Demographic Ratios at Cayonu: From Differential Preservation to Social Discrimination**

The degree of preservation of the human skeletal material at Early Neolithic Cayonu varies greatly from one collection unit to the next. Although several millennia of site disturbance have caused much of the variation, it is possible to look beyond this factor, to glimpse some details of the ancient mortuary program pursued in the community. This paper focuses on demographic ratios at Cayonu, both inside and outside the skull building. From amid the confusion of a taphonomically altered village and mortuary context, it begins to clarify social distinctions made by survivors as they buried their dead.

Hibb, Lisa K. (Southern Methodist)

[107] **The Southwestern Archaic: A View From the Southern Portion of the Northern Rio Grande**

Non-disturbance pedestrian survey in the Rio del Oso Valley of the Northern Rio Grande has

recorded an extensive Archaic period occupation from 5500 B.C.–A.D. 600. Although numerous multicomponent sites have been recorded in this area since the early 20th century, systematic research of the Archaic component has been limited. Several of the recently located sites have preliminarily been identified as single component archaic sites that are large and rich in cultural remains. These sites provide a unique research opportunity for investigating Archaic period chronology and site structure within a larger Southwestern cultural-historical framework.

Billeck, Bill (Smithsonian)

[120] **Temporal and Spatial Variation in Nebraska Phase Earthlodges in the Glenwood Locality, Iowa**

Ceramics from a series of isolated Nebraska phase earthlodges are seriated to produce a new chronology for the Glenwood Locality of Iowa. Prior ceramic seriations have failed, in part, because the spatial variability of vessel forms was thought to reflect time and not atemporal cultural differences. A new ceramic sequence that controls for spatial variation in vessel forms is supported by a local projectile point seriation, radiocarbon dates, and regional trends in rim form and projectile point notching patterns.

Binder, Didier (CNRS)

[117] **The Spread of the Neolithic in Southern France**

No cultural trait of the Mesolithic complex with blades and trapezoidal microliths (Castelnovian) can be traced within the assemblages of the print pottery Neolithic. In a symmetrical manner, real Neolithic elements in the Mesolithic context are either missing or questionable. On the contrary, the presence of neolithised Castelnovian series with mixed assemblages (Pyrenees, Massif central, western Alps, Plain of the Po) is certified on the periphery of the print pottery Neolithic complex. The whole of these data gives the image of a neolithisation of southwest European areas which corresponds in the first place to a colonization process. Acquisition of the Neolithic technical system by Mesolithic populations appears as a process displaced in time and space. The causes for such a displacement should be found in the Mesolithic identity, strongly marked at the cultural level, and in its specific mode of exploitation of the ecosystem.

Binford, Michael (Harvard): [11] (see *Kolata, Alan*)

Bishop, Paul (Monash University) and **David Godley** (Monash University)

[96] **Flooding, Sedimentation and Sukhothai-Era Sisatchanalai, Thailand: Changes in Flood Character or Living with Floods?**

The site of old Sisatchanalai has clearly experienced significant flooding over the last twelve centuries. The city and its wall are underlain by flood sediments, and flood sedimentation surrounds many of its buildings. It remains unclear, however, whether deposition of flood sediment occurred during the height of the city's life and, if so, why the city's location was chosen. Flow frequency analyses of modern stream flow data from old Sisatchanalai are used to characterize the magnitude and frequency of flows necessary to inundate the occupation levels underlying the old city, and the city itself, for comparison with the long flood records of southern China.

Biskowski, Martin (California-Los Angeles)

[47] **Artifact Classification Problems and GIS's**

Reasonable efforts to identify a realistic basis for an artifact type (beyond its descriptive, instrumental character) require the consideration of a broad range of contextual evidence. In the past, archaeologists usually lacked the data and/or the analytical tools necessary for this task, and this lack has influenced how we view types. But now, the maturation of regional research and the advent of GIS's and similar tools offer new opportunities to investigate the meaningfulness of artifact types. This paper provides examples from an ongoing study of manos and metates in the Teotihuacan Valley, Mexico.

Blades, Brooke (New York), **Michael Glascock** (Missouri-Columbia), and **Jean-Pierre Chadelle** (Service Regional D'Archeologie)

[57] **Neutron Activation Analysis of Late Cretaceous Cherts from Secondary Deposits near Bergerac (Dordogne, France)**

Lithics at numerous Paleolithic sites in southwest France are attributed to Maestrichtian cherts from secondary erosion deposits near Bergerac, evidently reflecting aspects of group mobility. While distinctive macroscopic features may be present in the cherts, geochemical characterization would provide an important means of assessing source attributions in the absence of such features. Samples from eight source areas in the vicinity of Bergerac are examined, and compared with artifacts from Aurignacian assemblages.

Blair, Carl (Minnesota)

[31] **Large-Scale Iron Production In The Past: The On-Going Research of SMELT**

Since its inception in the 1990, the Smelt project of the University of Minnesota has undertaken a series of full-scale, long-term experimental iron smelting campaigns. Focusing upon the late European Iron Age, a tremendous body of data relating to iron production have been generated. With the incorporation of the most recent data, from 1994, a critical point has been reached. It is now reasonable to take the experimental results from Smelt and combine them with information gathered from archaeological excavations. Together these two sets of information allow for the creation of meaningful models of early, large scale production.

Blanton, Dennis B. (William and Mary) (see also *Schuldenrein, Joseph*)

[87] **The Development of Coastal Environments and Paleoindian Settlement in the Mid-Atlantic**

The prospects for late Pleistocene–early Holocene archaeological sites are becoming clearer on the submerged continental shelf and in major embayments of the mid-Atlantic region. Sea level curves, geomorphological studies and palynological results permit reconstruction of the environments in these settings, including identification of areas with the greatest site potential. Recent finds of diagnostic artifacts in and around Chesapeake Bay are described in this context to describe an improved understanding of early settlement and geoarchaeological potential.

Blick, Jeffrey P.

[127] **Prestige Versus Wealth in the Cerro Guacas Polity During the Regional Classic Period (A.D. 1–900) in the Valle de la Plata, Colombia**

This research concerns the emergence of social inequality in chiefdoms. The purpose of this investigation is to study the nature and extent of the economic basis of social inequality in chiefdoms in the Valle de la Plata, Colombia. Archaeological evidence in this region indicates that Precolumbian chiefdoms of the Regional Classic period (A.D. 1–900) were marked by *prestige* differences reflected in funerary mounds and carved statues accompanying the burial of certain individuals (presumably chiefs). An alternative system of social differentiation, based on chiefly access to the "esoteric knowledge" of the supernatural realm, is proposed.

Blinman, Eric (Museum of New Mexico): [56] Discussant

Blitz, Jennifer (Wisconsin-Madison)

[82] **Social Inequality and Dietary Variability at Monte Albán, Oaxaca, Mexico.**

Chemical analyses of skeletal remains from Monte Albán, Oaxaca, suggest that a major dietary shift occurred between the Late/Terminal Formative period (350 B.C.–A.D. 300) and the Classic period (A.D. 300–A.D. 750). During the latter, wild plant resources were replaced in the diet with cultivated plants and animal protein. It appears that animal protein was consumed by those of a higher status as a symbol of personal power or prestige. This increased reliance on meat and agricultural resources occurred at a time of heightened social and political complexity.

Blitz, John H. (Bodoin): [10] (see *Lindauer, Owen*)

Bloemker, James D. (TRANSCO Energy)

[72] **The Firebreak Plow and Its Utility as a Subsurface Testing Technique**

This presentation will graphically describe the ground breaking propertico of the firebreak plow and evaluate its usefulness as a subsurface prospecting methodology for discovering archaeological sites buried in forested environments. A brief history of the plow's uses as a fire control device and an archaeological testing technique will be reviewed. The circumstances resulting in the selection of the firebreak plow for a specific study area will be explained.

Blom, Deborah E. (Chicago), **Dale J. Yeatts** (Stanford), and **Jane E. Buikstra** (Chicago)

[32] **A Bioanthropological Approach to Tiwanaku-Moquegua Valley Interaction**

Identifying ethnic distinctions through the archaeological record indicates how prehistoric peoples from Tiwanaku, a complex urban center in the high Andes, interacted with the residents of smaller, lowland communities in Peru's Moquegua Valley. While research at the valley's prehistoric capital, Omo, showed that Tiwanaku colonizers preserved the social hierarchies of their home region, our project found a less stratified situation at the valley's working-class settlement, Chen Chen. We studied variation amongst artificially deformed Moquegua Valley crania to demonstrate how ethnic distinctions were less pronounced at Chen Chen and thus indicative of its more equalized socioeconomic circumstances.

Blomster, Jeffrey (Yale)

[82] **Micro-Settlement Patterning and Demographic Change at Etlatongo, Oaxaca, Mexico**

Using data obtained through survey and excavation by the Yale University Etlatongo Project, this paper explores two related phenomena—shifting settlement patterns and demographic change—at the site of Etlatongo, in the Mixteca Alta of Oaxaca. Changing temporal occupations of the site are analyzed on a micro-settlement pattern level, and compared with a regional model for the Nochixtlan Valley. A demographic change appears in the Early to Middle Formative transition, and is compared with contemporary sites in Oaxaca. Finally, the paper examines the impact of these two processes on the transformation of the site through time.

Blonsky, Paul J. and David L. Browman (both, Washington-St. Louis)

[49] **Pragmatic Politics: Altiplanic Chilean Connections**

Percy Dauelsberg Hahmann had an abiding interest in altiplanic connections with north Chilean coastal areas. The current paper views the evidence from the perspective of the southern Titicaca basin, and focuses on the contrast between the patterns of linkages that developed for the formative period kingdoms, the expansive Tiwanaku period federation members, and the late prehistoric Aymara "señorios."

Blumler, Mark A. (SUNY-Binghamton)

[109] **Ecological Studies of Wild Cereals**

Ecological studies of Near Eastern wild cereals shed light on the transition from gathering to farming. The annual growth habit and large seeds of these plants, as well as the extreme seasonal drought to which they are adapted, apparently facilitated early agriculture. The wild cereals are not very tolerant of fire or grazing, and less weedy than sometimes reported. Consequently, coevolutionary agricultural origin hypotheses involving fire, herding, and/or dump-heaps probably do not apply to them.

Boada, Ana Maria

[127] **A Correspondence Between Social Differentiation and Political Hierarchy in the Valle de Samaca, Boyaca-Colombia**

Most of the ethnohistorical and archaeological literature concerning the northern Andes of Colombia has considered the prehispanic inhabitants ("Muiscas") to be one of the most developed societies of the country. This idea of high complexity comes from the 16th-century Spaniard's accounts and has been assumed by the investigators. An inconsistency between the ethnohistorical information and the archaeological record was pointed out by Reichel Dolmatoff (1986). The purpose of this paper is to contribute further to the knowledge of the "Muiscas" before A.D. 1500 through the analysis of the social differentiation within a village and its correspondence with the degree of political differentiation within its respective valley.

Bogucki, Peter (Princeton)

[117] **How Farming Came to Central Europe, 7000–5000 B.P.**

Between 7,000 and 5,000 years ago, agricultural communities were established in central Europe, between the Alps and the Baltic and between the Pripet Marshes and the Paris Basin. This process exhibits geographical and temporal variability. In some areas it was the result of the dispersal of farming populations (not truly colonization, for it lacked clear intentionality and complete unidirectionality); elsewhere, it involved the adoption of farming by local foraging peoples. Moreover, while it is possible to speak of a "transition to agriculture" in central Europe, it is also the case that the earliest farming systems differed from the mixed farming economy that characterized later prehistory in central Europe. This geographic and temporal variability will be highlighted with an example from north-central Poland.

Bogucki, Peter (Princeton): [76] Discussant

Boguszewski, Andrzej

[63] **Is There a Space for Theory Between Leroi-Gourhan and Bordes?**

Despite the fact of that so many theoreticians of modern science are French, archaeology in this country still remains very traditional in its pattern. However, some new methodological concepts are being lately implemented to this "French school of archaeology," mostly to archaeology of French Paleolithic. Although, methodological novelties and changes do not always lead to theoretical or conceptual change, there are some local differences on which I will focus in my presentation.

Bonani, Georges (ETH-Hoenggerberg): [110] (see Ahler, Stanley)

Bonde, Niels (National Museum of Denmark)

[101] **Dendrochronological Dating of the Viking Age Ship Burials at Oseberg, Gokstad and Tune, Norway**

Dendrochronology now provides dating for the three famous Viking Age burials of special

importance for chronology and ship-archaeology in Scandinavia and across early medieval northern Europe. The Tune find was excavated in 1867, the Gokstad and the Oseberg in 1880 and 1904 respectively. Today these findings form the nucleus in the Viking Ship Museum in Oslo. Until now their dating depended on evaluations of the decorated wooden artifacts in the burials. Now the grave goods as well as the ships themselves are exactly and independently dated by tree-rings.

Borremans, Nina (Florida Museum of Natural History)

[24] **Florida Archaeology Week**

Working together, professional and avocational archaeologists coordinated and implemented two-week-long public celebrations of Florida's past (October, 1993, and February, 1995). Over 200 public events were held across the state each year, united by the themes "Archaeology is Here!" (1993) and "Archaeology is About People" (1995). Brochures, bookmarks, posters, and booklets were published and distributed using funds provided in part by grants from the Florida Division of Historical Resources. The nuts and bolts of putting on Florida Archaeology Week is continuing to evolve (there are still plenty of nuts!), but will always require the collaboration of Florida's avocational and professional archaeologists.

Borrero, Luis Alberto (Programa de Estudios Prehistóricos-CONICET): [22] (see Franco, Nora Viviana)

Borrero, Luis Alberto and Nora Viviana Franco (both, Programa de Estudios Prehistóricos-CONICET)

[116] **Early Patagonian Hunter-Gatherers: Subsistence and Technology**

Evidence for human use of southern Patagonia goes back to around 11,000 B.P. Faunal remains from a number of localities suggest that early Patagonian hunter-gatherers were not focusing on Pleistocene megafauna for subsistence. The main target was, to judge from the available records, the guanaco (*Lama guanicoe*). However, its significance for subsistence is still open, since all the evidence comes from cave sites. As for small mammals, birds and plants, their remains are recorded at several sites, but are quantitatively unimportant. Analysis of the associated artifacts—including properties of the raw material, design, and energy input—suggests that an expedient technology was prevalent. A highly generalized way of life is suggested.

Bostwick, Todd W. (Pueblo Grande Museum)

[7] **An Accident and Its Consequences at an Archaeological Site Located in an Urban Setting**

Details the collapse of a historic well on an archaeologist during a project in Phoenix, Arizona. The well had been cross-sectioned per standard excavation techniques. Fire department emergency crews dug out the partially buried person, but the ensuing publicity created havoc and destroyed archaeological features. Inspection of the project by safety personnel revealed a lack of precautions prescribed by the Occupational Safety and Health Administration and the need for archaeologists to get training in health and safety issues.

Boszhardt, Robert F. (Mississippi Valley Archaeology Center)

[83] **Newly Identified Lithic Resources in Western Wisconsin**

For over a century, Hixton silicified sandstone (orthoquartzite) has been recognized as the premier lithic raw material from western Wisconsin, and has been traced in exchange networks ranging from Paleoindian to Oneota. Recent investigations have identified numerous orthoquartzite outcrops of varying quality in this region, creating uncertain macroscopic identification of "Hixton." Analytical techniques such as thin section petrography and Oxygen-18 isotope assay have begun to provide "signatures" of these various orthoquartzites. In conjunction with these investigations, the high quality local "Cochrane Chert" has been identified.

[33] (see Moffat, Charles R.)

Boucher, Sylviane (CRY-INAH, Mérida): [130] (see Kepecs, Susan)

Bousman, C. Britt (Texas-San Antonio): [9] (see Collins, Michael B.)

Bove, Frederick J. (California-Santa Barbara) and **Hector Neff** (Research Reactor-Missouri)

[61] **Obsidian Hydration Dating in Pacific Coastal Southern Mesoamerica**

The post-Formative chronology of the Guatemalan Pacific coast is being reassessed in light of over 1000 obsidian hydration dates from the Cotzumalguapa and Manantlan archaeological zones. Dates are calculated on the basis of artifact source assignments determined by neutron activation analysis and soil temperature estimates based on measurements at four different elevations. The large number of dates thus generated permits time to be viewed as continuous rather than segmented. The traditional, segmented chronology for the region implies a post-Formative occupation history marked by incredible population explosions and collapses, whereas obsidian dates from Classic period

contexts indicate more gradual expansions and contractions.

Bowen, Jonathan E. (Ohio Historical Society)

[14] **St. Charles Bifaces in the Flint Ridge Upper Mercer Lithic-Supply Zone**

More than 95% of the St. Charles bifaces (ca. 9000 B.P.) from an approximately 125,000 km² tract, which is roughly centered on northern Ohio, are made from Flint Ridge or Upper Mercer chert. The most intense concentration of such specimens (40/100 km²) is in the vicinity of the Great Swamp (Buckeye Lake), 15 km distant from Flint Ridge. Most of the severely heat-damaged specimens have been reported near the margin of the Black Swamp, 200 km to the northwest of the chert sources. It is possible that these specimens were placed in cremations.

Bowser, Brenda (California-Santa Barbara)

[112] **Style vs. Substance: The Ethnoarchaeology of Conambo Polychrome Pottery**

This paper presents ethnoarchaeological studies among Quichua and Achuar women in Conambo, a tribal community of semi-sedentary swidden horticulturalists in a remote area of the Ecuadorian Amazon. Polychrome beer bowls in Conambo represent a long-established, indigenous tradition of pottery manufacture for household use, where style is arguably independent of market influences. Pottery style and distribution networks of raw material (clay and mineral pigments) are analyzed to distinguish material correlates of social identity, addressing issues of group identity (ethnicity and political alliance) as well as personal identity.

Bowyer, Vandy E. (Toronto)

[71] **Paleoethnobotany of Two Princess Point Sites in Southern Ontario: Grand Banks (AfGx-3) and Lone Pine (AfGx-113)**

Nearly twenty years ago, the earliest cultivation in southern Ontario was linked to the Princess Point Complex, and early Late Woodland culture dating to between 1300 and 1000 B.P. Despite the significance of this economic transition, very little is known about prehistoric plant utilization during Princess Point times. This paper discusses the results of the first flotation sampling regime carried out on two Princess Point sites: Grand Banks (AfGx-3) and Lone Pine (AfGx-113). The results of this research are evaluated in terms of understanding plant utilization during the early Late Woodland in Ontario, and the development of agriculture in northeastern North America.

Boyd, Carolyn E. (Texas A & M)

[17] **Pictographic Evidence of the Peyote Cult in the Lower Pecos, Texas Archaic**

Considerable controversy exists regarding the origins of peyotism and the content of the earlier cult from which it emerged. The purpose of this paper is to demonstrate the presence of the peyote cult among the Archaic inhabitants of the Lower Pecos Region 4,000 years ago as evidenced in the archaeological record. *Lophophora williamsii*, the hallucinogenic peyote cactus, is identified in the sediments and in the Pecos River Style pictographs of the Lower Pecos Region of southwest Texas and northern Mexico. A review of the ethnographic and ethnobotanical literature provides an explanation for the presence of peyote in the archaeological record.

Boyd, William (Southern Cross University)

[96] **Environmental Archaeology of the Coasts of Southeast Asia and Papua New Guinea**

Coastal environments during the late Quaternary are noted for their tendency to change, often at moderately rapid rates. Such change may have important consequences for the archaeology of the coastal zone, in terms of both (i) the nature of inferred past human occupation, and (ii) the archaeological evidence and thus the archaeological strategies required to elucidate past human occupation. This paper will discuss recent environmental archaeology conducted on the Bangkok Plain of Thailand and the coasts of West New Britain. The implications for human settlement of the interaction of off-shore processes such as soil redeposition with on-shore catchment processes such as human environmental manipulation will be explored.

Boytner, Ran (California-Los Angeles) and **Arie Wallert** (Getty Conservation Institute)

[32] **Dye, Textile, and Culture in the Southern Andes: A Synthesis of Recent Investigations**

Until recently, dyestuff analysis was typically performed on textiles from museum collections which rarely have known proveniences. For the last two years, we have been analyzing textiles from various excavated sites, all from well-documented contexts. In this paper, we will incorporate the results of analysis published elsewhere with our most recent investigations. We will examine temporal, subregional and regional utilization of dyes and dyeing process by individual cultures. We will focus on the shift in dyeing traditions occurring by the end of the Middle Horizon. We will attempt to relate this shift to contemporaneous changes in political and ideological structure.

Bradley, Bruce A. (Crow Canyon Archaeological Center), **Michael Anikovitch** (Institute of Material Culture History, St. Petersburg, Russia), and **Evgenij Giria** (Institute of Material Culture History, St. Petersburg, Russia)

[97] **Early Upper Paleolithic in the Central Russian Plain: Streletskaya Flaked Stone Artifacts and Technology**

Early Upper Paleolithic sites with a developed bifacial technology are known in the Central Russian Plain. Site distribution, dating, technology, and traceological analyses are presented for some of this material. Although bifacially flaked artifacts are not uncommon in Middle Paleolithic sites in the same region, the Strletskaya Cultural assemblages exhibit the first real bifacial thinning technology. Along with highly developed platform preparation, and well controlled thinning, there is possible evidence of pressure flaking, and in one assemblage, intentional heat treatment. The origins of this technology are obscure as it its apparently fast replacement by more typical Upper Paleolithic blade industries.

Bradley, James W. (Robert S. Peabody Museum, Phillips Academy): [36] (see Spiess, Arthur E.); [98] Discussant

Bradley, Ronna J. (Arizona State)

[20] **A Comparison of Shell Ornament Production Strategies in the North American Southwest**

Shell ornaments exhibit a variety of forms and styles that require different levels and techniques of manufacture. The quantity of production debris varies with the different forms, and not all are equally visible archaeologically. This paper presents a comparison of marine and freshwater shell ornament production at several sites across the Southwest, emphasizing the variability in ornament styles and production techniques as they apply to specific regions.

Braniff C., B.: [122] Participant

Bray, Tamara L. (Smithsonian)

[40] **Coca Production and Andean Political Economy**

The vertical archipelago model has been the unquestioned paradigm for understanding Andean political economy for two decades. The extent to which this model emphasizes direct control over nonlocal resources has obscured the significance of other mechanisms of economic integration in the Andes. Coca, one of the defining elements of Andean culture, was a nonlocal product, yet its presence was indispensable to most forms of social interaction in the highlands where it both symbolized and engendered bonds of reciprocity. Contradictions noted in the relations of production versus the ideology surrounding coca consumption offer new insights into Andean political economy and long-term development patterns in prehistory.

Brennan, Sean: [45] (see Beck, Margaret E.)

Brenton, Barrett P. (Grinnell) and **Karl J. Reinhard** (Nebraska)

[30] **Evidence from Coprolite Analysis for the Ingestion of Corn Smut (*Ustilago maydis*) in the Prehistoric American Southwest.**

The fungal plant pathogen, corn smut (*Ustilago maydis*), can cause considerable damage to maize before harvest, decreasing yields. On the other hand its ethnobotanical use has been as both food and medicine. This paper presents the results of an analysis of 156 coprolites for fungal spores of corn smut from 5 different prehistoric sites (including foraging and horticultural societies) within the greater American Southwest. The analysis provided direct evidence for the ingestion of corn smut by prehistoric horticultural groups. The nutritional/medicinal implications of corn smut and its relationship to maize horticulture in the prehistoric Americas is highlighted.

Brewington, Robbie L. and **Dennis James** (both, Texas A & M)

[92] **Interregional Networks in the Classic Mimbres Period: The Ceramic Evidence**

Pottery sherds provide evidence of exchange and contact, though precise interaction spheres often remain unknown in the American Southwest. To address this issue, neutron activation analyses of Southwestern ceramics are ongoing at Texas A&M University. In 1993, 140 sherds of three ceramic types from seven sites were analyzed for trace elements. The sites are in the Mimbres Valley, Upper Gila, and Jornada areas. Five distinct clusters were formed: two center in the Mimbres Valley, two in the Upper Gila, and one in the Jornada. These results provide information to reconstruct interaction spheres during the Classic Mimbres Period.

Bril, Blandine (EHESS, Paris): [124] (see Roux, Valentine)

Brockington, Donald L. (North Carolina-Chapel Hill) and **David M. Pereira Herrera** (Universidad Mayor de San Simon-Cochabamba)

[65] **Recent Investigations into the Formative Period in Cochabamba, Bolivia**

Members of the Cochabamba Formative Period Project returned to Valle Ibirza in the eastern lowlands in 1993, recovering additional evidence of close ceramic similarities with eastern Peru. C¹⁴ dates indicate two major occupations: 1100–900 B.C. and 600–400 B.C. In 1994 salvage excavations at Yuraj Molino in the highlands yielded more ceramics identical to Valle Ibirza materials. Yuraj Molino, with C¹⁴ dates of 1600 and 1100 B.C., also was found to have been divided into activity areas: ceramic production, copper smelting and working, residence, and a graveyard.

Brooks, Alison (George Washington)

[44] **Public Education and Personnel Decisions: View from the Department Chair**

Provides a chair's perspective on how effective promotion and tenure cases might be built for academic archaeologists who have devoted a considerable portion of their professional activity to public education.

Brooks, Marjorie (Wyoming) and **George Frison** (Wyoming)

[70] **Stable Carbon Isotopes in Bison Bone: Lack of Evidence of an Altitheermal Drought**

Stable carbon isotope values found in bison bone (*Bison antiquus*, *Bison occidentalis*, *Bison bison*) from the Agate Basin, Carter/Kerr-McGee, Hawken, and Vore sites in Wyoming were evaluated. Preliminary analyses, which show a significant shift in dietary C₃/C₄ plant ratios at 9,600 B.P., indicate slight warming. However, this climatic trend is not the expected shift indicative of drought conditions. Further, results from the Hawken site (6400 B.P.) are not significantly different from those of the Vore site (200 B.P., Little Ice Age). Models describing partial or complete cultural abandonment of the Plains due to Altitheermal drought conditions must be reexamined.

Brooks, Robert L. (Oklahoma)

[54] **Public Perception and Archaeology: A Study of Attitudes among Farmers and Ranchers in Western Oklahoma.**

The past decade has witnessed an increasing concern with the public's perception of archaeology. However, little systematic research has been conducted to examine the attitudes, beliefs, and values of the public. A survey questionnaire was mailed to some 1000 farmers and ranchers in western Oklahoma to examine their attitudes regarding archaeology and preservation of archaeological sites. Results of this survey have provided data on the education of farmers and ranchers, the nature of their interest in archaeology, and their willingness to preserve archaeological sites.

Brose, David S. (Royal Ontario Museum)

[134] **Paleoindian Thematic Studies: The Roles of the SAA and the NPS in a Landmark Initiative**

The professional interest in the early peopling of the New World has long been a focus of both SAA and NPS. The initial thematic study, now more than a quarter-century out of date, will be rewritten to place old and new national historic landmarks, representing that episode, into a framework encompassing traditional and recent views. The development of this new initiative and the interlocking roles of public and private archaeologists will place Paleoindian sites firmly in public and private consideration.

Broster, John B., Mark R. Norton, and **Gary L. Barker** (all, Tennessee Division of Archaeology)

[87] **Archaeological Investigations of Stratified Clovis Sites in Tennessee**

Archeological testing has been conducted on two stratified Clovis sites in Tennessee. These two sites, 40BN190 and 40DV400, have produced the best evidence for intact Paleoindian sites in the state. The stratigraphy, features, dates, and lithic data analysis are the subject of this paper.

Broughton, Jack M. (Washington)

[103] **The Vertebrate Fauna of the Emeryville Shellmound: Evidence for Resource Depression and Intensification in Late Prehistoric Coastal California?**

A fine-scale stratigraphic analysis of the vertebrate fauna of the Emeryville Shellmound, San Francisco Bay, reveals dramatic changes in taxonomic composition during the late Holocene. In particular, the relative abundances of large species, namely artiodactyls, decrease significantly through time relative to smaller species, such as sea otters. Such a pattern strongly supports resource intensification models posited for this region. Data bearing on the age structure of the artiodactyl and sea otter remains allows an evaluation of whether or not the pattern is due to resource depression driven by increasing local human population densities.

Browman, David L. (Washington-St. Louis)

[65] **Pa-ajanu Revisited: Formative Titicaca Basin Monolith Cult**

Fifty years ago Posnansky first recognized and defined the formative stone sculpture of the Titicaca basin as the Pa-ajanu style. In the last few years, a number of new examples of this style have been located, broadening our understanding of the cult represented by the dual representations of this tradition, which includes such derivations as the Asiruni style defined by Kidder and the Yaya-Mama style defined by the Chavezes.

[49] (see *Blonsky, Paul J.*)

Brown, Clifford T. (Tulane)

[130] **Settlement Patterns and Social Organization at Mayapan, Yucatan, Mexico**

Mayapan, Yucatan, Mexico, was the political capital of much of northern Yucatan during the Late Postclassic period (A.D. 1250–1542). This paper presents the recent research on settlement patterns and community organization at Mayapan. Several topics are reviewed in the light of newly collected data, including the internal organization and taphonomy of households; the size, distribution, frequency, and internal organization of clusters of households; the relationship between the site settlement pattern and the distribution of water sources; and the distribution patterns in and among households that reflect social status, economic, specialization, and other social aspects.

Brown, James (Northwestern): [20] Discussant

Brown, Ken (TARL, Texas-Austin)

[9] **Berger Bluff: Early Holocene Foraging Station on the Coletto Creek Floodplain, Texas**

Berger Bluff is an 8.7 m high sandy bluff on Coletto Creek (Goliad County, Texas coastal plain). The lower 2.25 m, cyclically bedded, gleyed floodplain sediment, represent damp, marshy ground around a former alkaline spring. Charcoal and sediment organics date about 8500–11,000 B.P. (uncal). Artifacts are undiagnostic. Adjoining a small unprepared hearth were several thousand bone fragments, some on its surface, only a few charred. This *reclusive fauna*, small inconspicuous animals (aquatic, aerial, terrestrial, and terrestrial-fossorial) indicates successful predation in diverse habitats, coping with diverse prey habits. Such flexibility is distinctly human; breakage (mastication), proximity to the hearth, and partial charring of some bones suggest human predation.

Brown, M. Kathryn (Texas-San Antonio): [13] (see *Houk, Brett A.*)

Bruchez, Margaret (Texas A & M)

[90] **Excavations, Underwater Reconnaissance, and Paleoenvironmental Surveys, Northern Rim Lake Atitlán, Guatemala: Results of 1994 Field Season.**

Proyecto de Arqueología de Sololá utilizes textual analyses of the Cakchiquel Maya document, *los Anales de los Cakchiqueles* (1573), and archaeological investigations of material site remains to facilitate the understanding of cultural development of the northern rim of the Lake Atitlán basin in the southwest highland region of Guatemala. The 1994 field operations include nine test pit excavations, underwater surface reconnaissance of the 15 km northern shoreline, and paleoenvironmental surveys of 25 sq km in the Department of Sololá. Results of ceramic and lithic classification and dating analyses, data on architectural styles, feasibility of continued underwater and paleoenvironmental investigations are presented.

Brunfiel, Elizabeth (Albion): [26] (see *Parsons, Jeffrey*)

Brunswig, Robert H. (Northern Colorado)

[105] **The Dent Mammoth Site: Directions in Current Research**

The University of Northern Colorado began conducting a long-term research program at northeastern Colorado's Dent Mammoth site (5WL269) in 1987. To date, those investigations have been primarily nonintrusive, including: 1) assembly of a database of past research, 2) coring, test-excavations, and analyses of geological samples, and 3) analyses of Dent's extant faunal and artifact inventories. Current coring and testing results support a hypothesis of historically recent redeposition of the Dent mammoth remains from an upslope, Late Ice Age gully locality. Soil coring of unexcavated site areas provide evidence for the existence of a buried, 5–10 meter wide paleo-draw containing mammoth skeletal materials. Other parallel research includes mammoth season-of-death studies, analysis of mammoth tooth plant residue remains, and use-wear analyses of Dent Clovis tools. (See also *Pitblado, Bonnie L.*)

[70] (see *Haynes, C. Vance*)

Brush, Karen A. (Science Animated)

[72] **Dangerous Visions? Computer Graphics in Archaeology**

Computer reconstructions of archaeological sites appear with increasing frequency in museums,

television programs, and commercial 'edutainment' software. Such models can be invaluable visual aids where evidence for the original appearance of a site is sparse or difficult to interpret. However the increasing photo-realism of such models poses serious problems. Fooling the viewer into accepting an interpretation of the past for empirical fact is both feasible and undesirable. The ability of such powerful images to rectify particular versions of the past must be mitigated by providing several alternative reconstructions or by deliberately avoiding extreme photo-realism in archaeological reconstructions.

Bryson, Reid A. (Wisconsin-Madison): [133] (see *Bryson, Robert U.*)

Bryson, Robert U. (Far Western Anthropological Research Group) and *Reid A. Bryson* (Wisconsin-Madison)

[133] **Archaeoclimatology: High Resolution Simulation of Regional Holocene Climates**

In order to adequately assess the effects of climate change on human populations, paleoclimatic simulations of human scale are required. That is, these simulations must have high temporal resolution applicable to specific regions. In contrast to the microphysical nature of General Circulation Models, which require millions of iterations to produce climatic simulations, the macrophysical, hierarchical model applied here relies on relationships of large scale to produce century-scale simulations of regional climates. Holocene climatic simulations of the northwestern U.S., Egypt, and the Near East are discussed in light of the archaeological records for those regions.

Bubemyre, Trixi D. (Arizona) and *Patrick D. Lyons* (Arizona State Museum)

[85] **Answering Vessel-Based Questions with Sherd Assemblages: Life History Studies of Ceramic Variability**

For archaeologists interested in behavior, the appropriate unit of analysis is the individual artifact that once was whole. Given that archaeological ceramic assemblages are usually made up of sherds rather than whole vessels, efficient frameworks for answering vessel-based questions are crucial. While methodological inroads have been made over the years, important problems remain. This paper examines a variety of approaches and seeks to combine the best aspects of these in a life history approach to ceramic variability.

Buck, Paul E. (Desert Research Institute, Reno) (see also *Haynes, Gregory M.*)

[121] **In-Field vs. Laboratory Analyses of Lithic Scatters in the Yucca Mountain Area**

The Yucca Mountain Project has been conducting in-field analyses of surface scatters of chipped stone artifacts in southern Nevada. After their collection as part of mitigative data recovery, the assemblages were analyzed in a more traditional fashion in DRP's archaeology laboratory. Comparison of lab and field analyses from two sites suggest: (1) some kinds of analyses are better done in the laboratory, although laboratory bias cannot be entirely eliminated; (2) other analyses are as accurate and can be more cost-effective if completed in the field. In-field analyses can reduce curation charges and satisfy some native American concerns regarding artifact collection.

Buckler, Edward, Timothy Holtsford, and *Deborah Pearsall* (all, Missouri)

[34] **Maize Domestication: The Molecular Evidence With Respect to Biogeography and Early Holocene Climate Change**

A molecular evolution study of *Zea* ribosomal ITS sequence is integrated with a novel model of Pleistocene and Holocene environmental changes in order to reconstruct the timing and the location of maize domestication. Molecular evidence indicates *Zea mays* speciation at the end of the Pleistocene. A warm and wet early Holocene allowed *Zea mays* subspecies to spread throughout central Mexico. The Balsas, Oaxaca, and Tehuacan valleys probably all contained the maize ancestor *Zea mays* subsp. *parviglumis*. Maize was likely domesticated only once, and subsequent teosinte hybridization was minimal. Teosinte exploitation was probably minimal until the first steps of domestication occurred.

Buckmaster, Marla M. (Northern Michigan)

[51] **Current Evidence for Late Pleistocene and Early Holocene Occupation in the Central Upper Peninsula of Michigan**

Since the discovery of 86 Eden-Scottsbluff and other early projectile points in Central Marquette County in 1987, attention has been focused on the surrounding uplands in an attempt to expand information of Late Paleoindian and Early Archaic cultures. Limited site surveys of specific lakeshores and several cultural resource management projects have recently documented Agate Basin, Hell Gap, and additional Scottsbluff, Eden, and a variety of Early Archaic projectile points. In addition, test excavation of a large quarry site produced evidence of an early quartzite industry and a C-14 sample.

Budak, Michael K. (Minnesota Historical Society)

[14] **Laurel Ceramics: A Pointed Question**

The Laurel Culture, as did many other Middle Woodland groups, manufactured conoidal-shaped ceramic vessels, but the purpose of this shape has been a question with elusive answers. A possible explanation is that it is the result of a manufacturing technique, not because of functional use. Constructing the vessel in an inverted manner, a technique used in many parts of the world, offers a manufacturing advantage and the conoidal form lends itself well to this method.

[91] **Concept: Context; Issues and Ethics**

Buehrle, Anita (GYRA-Toronto): [95] (see *Monckton, Stephen G.*)

Buikstra, Jane E. (Chicago): [33] (see *Charles, Douglas K.*); [32] (see *Blom, Deborah E.*)

Bullock, Peter Y. (Museum of New Mexico)

[19] **Multidimensional Assessment of Anasazi Mortuary Behavior**

Traditional descriptions of Anasazi mortuary practice are based on undisturbed interment features. More recently our attention is drawn to mass burials and evidence of cannibalism and violence. The focus on these behavioral extremes limits our understanding of the range of mortuary behavior, and our ability to relate this behavior to the broader context of Anasazi culture. This study addresses additional dimensions of Anasazi mortuary behavior represented by secondary interments and by the recovery of human skeletal elements from non-burial features. These generally overlooked occurrences suggest deliberate post-interment treatment of human bone such as for curation or ancestor worship.

Bullock, Peter Y. (Museum of New Mexico) and *Nancy Hanks* (Western Illinois)

[42] **The Origin of Blue Corn in the American Southwest**

Blue corn is a traditional regional food of the American Southwest, but is it a native crop? We suggest blue corn was introduced into the region from another area known for blue corn Tlaxcala, Mexico. The Tlaxcalans, as Indian auxiliaries of the Spanish, are documented actively involved in the Spanish conquest and settlement of Northern Mexico, Texas, and probably New Mexico. No prehistoric blue corn is known archaeologically. A total lack of prehistoric blue corn in the Southwest combined with a Tlaxcalan presence, makes Spanish conquest the likely agent for the introduction of blue corn into the American Southwest.

Burgett, Galen R. (U.S. Army Directorate of Environment, Ft. Bliss)

[10] **Chaotic Landscapes, Eolian Geomorphology, and the Interpretation of the Surface Archaeological Record**

Eolian geomorphic environments present a challenge to archaeologists in the interpretation of the surface archaeological record from such contexts. Research conducted in southern New Mexico and western Texas indicates that deflation, as traditionally defined, is not the only geomorphic process that contributes to the construction of the surface archaeological record. Observations made on surface distributions of artifacts in dune fields indicate that artifacts may be episodically circulated through the surface system of eolian sand formations. The research presented here discusses the phenomenon of eolian induced artifact displacement and methods for interpreting such distributions.

Burke, Ariane (Manitoba)

[60] **Seasonal Resource use in Southwestern France: Defining Mobility on Regional and Local Levels**

Mobility is central to our definition of hunter-gatherers. Hunter-gatherer adaptations are viewed as essentially dynamic and, therefore, flexible in their response to change. Recent studies of seasonal resource use in southwestern France, however, have shown that the degree of mobility in hunter-gatherer settlement systems may vary at different scales of analysis.

Burkholder, Jo Ellen (SUNY-Binghamton)

[65] **Ceramics and Cultural Process at Iwawi Bolivia, A Tiwanaku Site**

The Iwawi site is divisible into two components separated by volcanic ash. Ceramics from above the break exhibit Tiwanaku affinities. However, the lower component is enigmatic. As part of refining the chronology for Tiwanaku it is important to place this lower component in terms of cultural affinities and absolute date. This paper examines ceramics from this lower component and their affiliations. Materials they are associated with at Iwawi and similarities to already known ceramic traditions are of interest. Most interesting is the apparent unrelatedness to either Chiripa, earliest Tiwanaku styles, or other possible forebearers.

Burroni, Daniela B. (Universita' di Siena, Italy): [76] (see *Donahue, Randolph E.*)

Burton, James (Wisconsin) and **Lori E. Wright** (McMaster)

[68] **Reassessment of Barium and Strontium as Paleodietary Indicators**

Barium and strontium in bone preserve a record of the high-calcium foods in past diets. Although they do not yield, as previously believed, a simple measure of the dietary plant/meat ratio, they can enhance our knowledge of past subsistence strategies. When used with other evidence, including knowledge of the compositions of foods, they can constrain the range of possible diets and provide information about a variety of dietary factors such as the consumption of high-starch cultigens and seafood.

Bustard, Wendy (Smithsonian)

[78] **Genotypes of Space: A Spatial Analysis of Domestic Structures in Chaco Canyon**

Architectural theories of space generate methodologies useful for consistent description and quantification of archaeological space and spatial relations. The theoretical construct of generic function can be used to examine the sequencing of space in terms of movement through and occupation of space. Analyzing building interiors in terms of spatial and semantic genotypes results in the identification of inequality genotypes that measure functional differentiation within spatial configurations. The application of generic function, genotype and functional differentiation analyses to small structures of the classic Chaco phase in the American Southwest produces new insight into domestic spatial organization.

Butler, Virginia L. (Portland State) and **R. Lee Lyman** (Missouri-Columbia)

[38] **Taxonomic Identifications and Faunal Summaries: What Should We be Including in Our Faunal Reports?**

Most faunal analysts asking questions of subsistence and paleoecology would agree that taxonomic identifications form the cornerstone of their research. Yet there is little agreement about what constitutes an adequate or appropriate faunal summary. Are simple lists of taxonomic frequencies sufficient? Should data summaries include explicit criteria used to assign specimens to taxonomic category? What approaches to reporting best advance our science and ensure an adequate archive for future researchers? Given the tremendous (and increasing) number of faunal studies generated each year and the range in detail provided, it is time to examine our approaches to documenting taxonomic identifications.

Butterworth, Kollene R. (Ohio Department of Transportation) and **Craig Keener** (Ohio State/Ohio Department of Transportation)

[14] **Through Space and Time Along the Old Lincoln Highway: An Archaeological Overview of the US30 Improvement in Ohio**

The Ohio Department of Transportation is planning to relocate and widen approximately 100 discontinuous miles of existing US30. Three to four alternate corridors varying in width from 500–2,000 feet were surveyed from west to east along the 100 mile alignment for archaeological resources. This survey resulted in the location and inventory of over 3,000 new archaeological sites. These sites represent a continuum through time from Paleoindian to Historic and cross-cuts a variety of environmental setting in Ohio. An overview of the results of the survey will be presented in graphic format. Using mapping and charts as illustration, some preliminary conclusions will be drawn concerning site distribution along the survey corridor.

Buttles, Pamela J. (Texas-Austin): [13] (see *Hughbanks, Paul J.*)

Byrd, John E. (East Carolina)

[120] **Differential Subsistence Patterns During the Swift Creek Phase**

Faunal remains from several Gulf Coast prehistoric sites belonging to the Deptford, Santa Rosa-Swift Creek, and Swift Creek Phases were analyzed. Species compositions in the assemblages from all phases indicate heavy reliance on estuarine resources. Further, fish bone element frequencies and large fish size in the Swift Creek assemblages suggest that Gulf Coast Swift Creek peoples had developed more advanced fish capture and storage techniques than their contemporaries of the Pensacola Bay area or the Atlantic Coast. The advanced fishing techniques are believed to be related to the greater complexity of Gulf Coast Swift Creek culture.

[10] (see *Owens, Dalford D.*)

Cable, John S. (New South Associates)

[129] **A Late Archaic Ceramic Sequence for the South Carolina Coast**

Although sand- and fiber-tempered Late Archaic ceramics on the South Carolina coast have been the subject of much research and debate for more than 50 years, detailed chrono-cultural sequences have never been developed. A recent multi-attribute analysis of the Spanish Mount assemblage provides a basis for not only calibrating the chronological position and cultural affiliation of this large shell mound, but also affords the opportunity to construct a much broader correlation of regional

assemblages. This paper will describe the results of the Spanish Mount analysis and present a seriation model of Late Archaic ceramic change for the region.

[120] (see *Wallsmith, Debbie*)

Cackler, Paul (Missouri-Columbia), **Michael D. Glascock** (Research Reactor, Missouri), **Hector Neff** (Research Reactor, Missouri), and **Beverly Mitchum** (Pennsylvania Historical and Museum Commission) (see also *Reese-Taylor, Kathryn*)

[94] **Neutron Activation Analysis of Chert Artifacts from Cerros, Belize**

Black chert artifacts have been found at Cerros and other coastal sites in northern Belize. Most of the Cerros assemblage is made of banded brown and gray cherts which were imported from lithic workshops located 90 km to the south. Little black chert occurs in the workshops and some investigators have suggested that the black coloration results from the submersion of chert artifacts in water. Adding to the controversy is the recent discovery of a possible black chert source. Our research addresses this question through the neutron activation analysis of black chert samples from Cerros and the possible source areas.

Calabrese, Francis A. (National Park Service): [74] Participant

Callmer, Johan (Humboldt University)

[128] **Site and Settlement in Southern Scandinavia Ca. 600–1100 A.D.**

In the sixth and seventh centuries, settlement in southern Scandinavia is largely restructured as a result of economic and social/political changes. A stable system of agglomerated settlements is established in the core regions. Peripheral areas are dominated by small units and have a more unstable pattern. Political centers as a distinct category already appear earlier but their number increases markedly during the period. Trading places of a manifest character make their appearance in the seventh/eighth centuries. Both centers and trading places play an important role in the urbanization process. The medieval settlement pattern is formed during the period.

Cameron, Catherine M. (Advisory Council on Historic Preservation)

[62] **Architecture, Technical Choice, and Population Movement in the Northern Southwest**

Technical choices expressed in the built environment of the northern Southwest are used to explore the cultural identity of actors in the population movements of the late prehistoric period (A.D. 1200–1400). Archaeologists have long recognized that this period was marked by widespread regional abandonment and reorganization of population, yet the causes, scale, and the manner in which these population movements took place remains obscure. Stylistic variation in ceramics has been the most commonly used tool for identifying cultural boundaries in this area, but the technology of built environment may add significantly to our understanding of interactions across cultural boundaries that result from population movement.

[25] Discussant

[48] (see *Anyon, Roger*)

Capone, Patricia (Harvard)

[56] **New and Used Directions in Glaze Ware Production–Exchange Studies: A Current Petrographic Example from the Protohistoric South-Central Rio Grande**

Born in the Rio Grande, ceramic petrography can continue to lead to new directions in production-exchange studies. This study provides an example of combining existing data and collections from the protohistoric south-central Rio Grande with new approaches and new results to illustrate: 1) expanded knowledge of production-exchange networks, 2) questions beyond trade reconstruction that can be addressed, 3) the ability to investigate technology through petrography, and 4) the potential of combining old and new data and approaches to broaden the effectiveness of petrography.

Caran, S. Christopher (Texas-Austin): [82] (see *Neely, James A.*)

Carlson, Claire C. (Massachusetts-Amherst)

[102] **Social Memory at Pine Hill: A Critical Perspective on the Pocumtuck after the Contact Period**

This paper challenges the historical construction of the absence of Native Peoples from the Connecticut River valley since European colonization. Using oral traditions, written histories, and archaeological data, I will challenge the notion that Native peoples were absent from the valley in the 18th and 19th centuries. Critical interpretation of this data set is offered as one way to talk about the continued use of the Deerfield landscape by the Pocumtuck.

Carr, H. Sorayya (Boston)

[130] **Some Reflections on Interpreting Archaeofaunas from Northern Yucatan**

Zooarchaeology has provided accumulating evidence on many facets of life in Yucatan.

Nevertheless, certain patterns that appear in the faunal data present interpretive difficulties. Examples are the spatial distribution of fish and iguana remains, cited as evidence for participation in trade networks (fish) and as an aspect of changing subsistence strategies through time (iguanas). Interpretation of these patterns has been hampered by non-comparable contexts and recovery techniques. Experimental application of identical techniques in a wide variety of contexts, combined with close attention to context in the interpretation and reporting of faunal assemblages, should improve our understanding of these patterns.

Carr, Kurt (Bureau for Historic Preservation)

[57] **Paleoindian Settlement Patterns and Lithic Sourcing in the Northeast**

The sourcing of lithic material has long been a central theme in defining Paleoindian settlement patterns. Withoft (1951) used sourcing studies to argue for the long distant movement (400 km) of lithic material while Gardner (1976) argued that Paleoindian movements were relatively short, less than 80 km. Meltzer (1984) suggests that these patterns represent different adaptations to glaciated and unglaciated environments. This paper will examine published data from the East and over 200 sites in Pennsylvania. Although the vast majority of the sourcing studies were based on a macroscopic analysis, there is also evidence from debitage and tools which supports Meltzer's differentiation between the northern and southern patterns.

Carrasco, Ramón (Instituto Nacional de Antropología e Historia): [52] (see Dowd, Anne S.)

Carrelli, Christine W. (Rutgers)

[90] **Masonry Construction Systems at the Acropolis, Copan, Honduras**

Three interrelated tunneling projects beneath the Acropolis at the Classic period (A.D. 250-900) Maya site of Copan, Honduras, provide an unprecedented opportunity to explore a 400-year sequence of superimposed masonry architecture which formed the royal seat and administrative center of the Copan polity. Utilizing existing tunneling excavations, this dissertation research provides a detailed analysis of the variability of the Acropolis architecture through time and a study of the energetics involved in producing it. It addresses theoretical questions concerning the relationship between energy expenditure and social standing, in a context where the structures clearly were constructed for royal use.

Carter, Barbara J., Robert C. Dunnell, and Laura Newell-Morris (all, Washington)

[10] **Gender-Linked Differences in Sr/Ca Ratios: Experimental Data from *Macaca nemestrina***

Gender-linked differences in Sr/Ca ratios in archaeological populations have been interpreted as arising from dietary differences or differences in calcium metabolism during pregnancy and lactation. The metabolic hypothesis is not well grounded. Using a sample of approximately 30 *Macaca nemestrina*, *in vivo* labeling, and electron microprobe analysis, bone Sr/Ca is measured before, during, and after a reproductive episode. Preliminary results clarify the conditions under which inferences can be drawn from gender-linked differences in Sr/Ca ratios, as well as demonstrate the value of treating bone as a variable matrix rather than as a uniform sample.

[72] (see Dunnell, Robert C.)

Carter, Elizabeth (California-Los Angeles)

[58] **Ceramic Production in the Kahramanmarash Valley, Turkey**

The Kahramanmarash Valley is situated in an archaeologically unknown and fertile area in south-central Turkey. This preservation will focus on the evidence for the local production of Middle to late Chalcolithic ceramics identified during the course of our survey work in the valley in 1993 and 1994. Preliminary analysis suggests that during the Middle Chalcolithic (Halaf-Ubaid, ca. 5500-4500 B.C.) ceramic production and settlement were centered at a single very large (18-20 ha) site. During the subsequent Late Chalcolithic (c. 4500-3400 B.C.) and EBA I (c. 3400-3000 B.C.) periods, there is evidence of localized production at various sites in the valley. Changing patterns of ceramic production will be discussed with regard to contemporary settlement systems identified in the region.

Carucci, James

[35] **The Impact of Prehistoric Humans on Marine Ecosystems: Faunal Evidence from the Rock Islands of Palau**

The Palau Archipelago in southwestern Micronesia was colonized relatively late in prehistory. Humans apparently arrived about A.D. 1; by A.D. 600, small populations began extracting food resources from the coralline Rock Islands south of Babeldaob. Permanent villages developed by A.D. 1200, and the number of humans in the area had begun to affect the rich local resources. Faunal evidence indicates that marine food resources in the Rock Islands were significantly impacted late in time. Prehistoric Palauans living in the permanent Rock Islands villages "over-fished" certain resources, causing crab populations to fall, and molluscs and fish to decrease in average size.

Caruso-Wessel, Terri (Earth Tech), **Sharon Rushing, Kerry Hennon, and Julio Roldan**
[72] **More Data for Your Excavation Dollars: The Successful Application of Geophysics in Archaeological Investigations**

The use of geophysics can greatly benefit archaeologists in their attempt to characterize subsurface cultural materials. In this presentation, we describe our methodology for archaeological evaluations, using a combination of geophysical techniques (primarily proton magnetometer and ground penetrating radar [GPR]) designed specifically for each individual site. We will demonstrate the effectiveness of the techniques based on the following criteria and objectives: 1) vertical and horizontal site boundary definition, 2) location of subsurface deposits and/or features, 3) minimization of site area disturbed, and 4) maximization of positive results gained from excavation. Examples will be provided from studies in Arkansas and California.

Cascio, Lisa M. (SUNY-Albany), **Timothy S. Hare** (SUNY-Albany), **David K. Schafer** (New York State Museum), and **Michael E. Smith** (SUNY-Albany)

[90] **Archaeological Survey of the Yauhtepec Valley, Morelos, Mexico**

We describe the methods and preliminary results of our full-coverage survey of the Yauhtepec Valley conducted in 1994. Four methods were employed: full-coverage fieldwalking; intensive surface collection at a sample of site; limited test-pitting; and nonsite surface collection following transects. Over 150 km were surveyed, resulting in the identification of over 300 sites, with occupations from the Early Formative through the colonial period. Preliminary results in the areas of settlement patterns, demography, and regional organization are presented here. We give particular attention to the Classic and Late Postclassic periods, when population and social complexity were at peak levels.

Casella, Eleanor Conlin (California-Berkeley)

[79] **To Watch or Restrain: Appropriations of 19th Century Female Prisons**

The Tasmanian Female Factories, part of the 19th century Australian Convict System, consisted of a number of female prisons and hiring depots. The material world of these sites was an overt mediator of Factory interactions. Through both artifacts and architecture, Prison Superintendents, Convict Department Officials, and prisoners themselves consciously manipulated site landscapes, communicating acts of surveillance, rebellion, containment, punishment and subordination. Today, two of these sites are managed historic sites. Tourists experience fully reconstituted landscapes, ones that present tidy and unthreatening views of their heroic heritage. This paper will explore continuing traditions of landscape manipulation: appropriations *in* the past, and appropriations of the past.

Cassell, Mark S. (Mississippi Valley Archaeology Center/UW-La Crosse) and **Wendy K. Holtz**
[45] **Agriculture and Material Culture in Wisconsin's Central Sands, Ca. 1870-1940**

In 1994, Wisconsin's Central Sands was the location of archaeological research focused upon historic farmsteads, a resource base which is among the most frequently encountered but poorly understood in cultural resources management activities. The 21 farmstead sample dates between 1870 and 1940, an era of multiethnic immigration into a marginally productive agricultural area, and of government wetlands drainage programs which resulted in further environmental degradation. Despite increasing marginality, agrarian land use persisted. This paper links archaeological and historical data to provide insights into material manifestations of human social adaptation to changing conditions of agrarian production before World War II.

[100] (see Dekin, Albert A.)

Cazzella, Alberto and Maurizio Moscoloni (both, Università "La Sapienza," Rome)

[76] **The Walled Bronze Age Settlement of Coppa Nevigata, Manfredonia, and the Development of Craft Specialization in South-Eastern Italy**

The Bronze Age settlement of Coppa Nevigata was inhabited from the beginning of the second millennium B.C. We don't know if it was fortified in the earliest phase of occupation, but it is possible that its location on the border of a lagoon was selected because its inhabitants could engage in maritime trade without being exposed to attacks from the sea. There is some evidence that a local natural resource (*Murex trunculus*) was exploited to produce purple. Huge fortification walls were built about the middle of the second millennium B.C. By the Late Bronze Age (12th-13th centuries B.C.) craft activities such as pottery, bronze and probably iron production were carried on.

Cesarski, Ellen (SUNY-Albany)

[14] **Organizational Variability and Prehistoric Land Use in the Hoosic River Drainage**

The exploitation of drained glacial lake basin environments during the early postglacial period (12,000-8,000 B.P.) has been documented in several regions of northeastern North America. Nicholas proposed a model for the location of residential areas during and after this period based on temporal changes in resource productivity. Lithic assemblages from the Hoosic River drainage are analyzed within the framework of this model. Collections included in the analysis result from both amateur and professional activity. Methods used to generate comparable data are discussed.

Chabai, Victor (Institute of Archaeology, Ukraine): [97] (see *Marks, Anthony E.*)

Chadelle, Jean-Pierre (Service Regional D'Archeologie): [57] (see *Blades, Brooke*)

Chaloupka, George (Northern Territory Museum-Australia): [17] (see *Chippindale, Christopher*)

Chambers, Karen E. (Pennsylvania State) and *James R. Purdue* (Illinois State Museum)
[135] **Building Blocks of Bison: Ancient DNA Analysis of Archaeological Animals**
Sequence and RFLP analysis of bison populations from the Glenrock site in Wyoming and the Hudson-Meng site in Nebraska are compared with similar data from extant bison. Analysis focuses on the mitochondrial genome, in particular, on the D-loop or control region. In these archaeological populations, animal behavior is believed to have had a marked effect on the mitochondrial gene pool.

Champion, Tim (University of Southampton): [55] Discussant

Chan, Alexandra (Vassar): [133] (see *Johnson, Lucy Lewis*)

Chapman, Bob (University of Reading): [117] Discussant

Charles, Douglas K. (Wesleyan) and *Jane E. Buikstra* (Chicago)
[33] **Structural Evidence of Ritual Practice at the Hopewell Moundhouse Site in West-Central Illinois**

Excavations conducted during the summer of 1994 by the University of Chicago Field School at the Middle Woodland (Hopewell) Moundhouse site in the Illinois River valley recovered evidence of successive periods of construction, modification and use of the large mound situated at the site. The evidence includes prepared surfaces, concentric rings of postmolds which had been filled with distinctive soils, and pits filled with refuse resulting from activities associated with the mound. These features appear to be unique to the region as accounts from earlier excavations at similar sites do not include these structural components.

Charles, Ruth (Queens College, Oxford)

[68] **Butchery Evidence from the North-Western European Late Upper Paleolithic**
This paper will examine the butchery evidence from a number of Late Upper Paleolithic sites in the Meuse basin. Recent work on the chronology of the Late Magdalenian settlement of this region will be presented. Evidence for large mammal exploitation from the Trou de Chaleux, Trou des Nutons, Trou du Frontal, Grotte du Coleoptere and the Grotte de Sy-Verlaine will be discussed.

Charlton, Thomas H. (Iowa): [26] (see *Evans, Susan Toby*); [26] (see *Nichols, Deborah L.*)

Charlton, Thomas H. (Iowa) and *Patricia Fournier G.* (Escuela Nacional de Antropología e Historia, Mexico)

[125] **The Changing of the Guard: The Early Colonial Period in the Basin of Mexico**
Cortes's defeat of the Aztecs on August 13, 1521, marks the transition of the Basin of Mexico from the center of an indigenous imperial system to one of the far flung peripheries of the Hispanic empire. Recent archaeological research in the basin and adjacent areas has clarified the variable impact of the new imperial system with reference to the urban-rural continuum, socioeconomic status, and ethnicity of the indigenous and intrusive populations. Contrasts and continuities between the Aztec and Hispanic systems are addressed.

Chatters, James C. (North American PaleoScience)

[103] **Resource Intensification and Demography on the Plateau of Western North America**
Since the mid-Holocene, Plateau hunter-gatherers evolved from dispersed, residentially mobile foragers to semi-sedentary, seasonally nucleated, logistically mobile collectors. First, mobility frequency declined and the niche broadened, then narrowed, with dispersed sedentism, small mobility range, and extensive food processing and storage. Finally, mobility range increased, along with seasonal nucleation, and a gradual widening of the niche. The relationship of these changes to regional demographics indicate that some forms of intensification may be density-dependent, while others are density-independent. Archaeologists may be combining multiple phenomena under the concept of intensification, restricting our understanding of cultural evolutionary process.

Chenault, Mark L. (SWCA, Inc.): [118] (see *Motsinger, Thomas N.*)

Childress, William: [87] (see *Schuldenrein, Joseph*)

Childs, S. Terry (Smithsonian)

[124] **"After All, a Hoe Buys a Wife": The Social Dimensions of Iron Working in East Africa**
Mandatory social inclusion and exclusion, along with a considerable amount of opportunism, characterizes the complex process of iron working among the Toro of western Uganda. While the good fortunes of iron workers attract some people, others are kept away from various activities. This paper examines the effects of age, gender, wealth, and other social factors on the organization and outcome of iron working efforts. Also discussed is the use of some iron working tools to reinforce long-standing social rules or to offer opportunity in the community.

Chilton, Elizabeth S. (Massachusetts-Amherst)

[62] **The Cultural Origins of Technological Choice: Unravelling Algonquian and Iroquoian Ceramic Traditions in the Northeast**

In the quest to interpret ethnicity and chronology for the Late Woodland period (A.D. 1000-1500), archaeologists in the Northeast have focused primarily on decorative attributes of ceramics. However, the notion of technological style provides a more appropriate model for understanding the complex relationships within and between groups in the region. Technological style or instrumental form includes choice of clay, temper, shape, wall thickness, and techniques of construction and firing. I suggest that the dissimilarity between Late Woodland Algonquian and Iroquoian ceramic assemblages reflects a more profound difference in these societies' technical systems, which includes house form, settlement patterns, mobility, and social complexity.

[102] (see *Keene, Arthur S.*)

Chippindale, Christopher (Cambridge University): [76] (see *Barfield, Lawrence*)

Chippindale, Christopher (Cambridge University), *Paul S. C. Tacon* (Australian Museum-Sydney), *D. Erle Nelson* (Simon Fraser), *George Chaloupka* (Northern Territory Museum-Australia), and *John R. Southon* (Lawrence Livermore)

[17] **How Rock-Art Figures Vary Over Time: Lessons from the Northern Territory of Australia**

Faced with evident variability in ill- or un-dated material, the archaeologist starts from the reasonable expectation that variability mostly arises by the passing of time: perceived "style" will be a good indicator of date. Rock-art in western Arnhem Land, in the Northern Territory of Australia, is unusually well-dated. In its complex pattern of changing variability, we can start to see a real picture which is more complex and more credible.

Christensen, Alexander F. (Vanderbilt)

[34] **Cranial Non-Metric Evidence for the Nahua Migrations**

In Mesoamerica, traditional craniometric studies of biological affiliation have been hampered by the widespread practice of cranial deformation. Discrete non-metric traits of the cranium, however, appear to be largely unaffected by deformation. This study analyzes non-metric data from ten central, north, and west Mexican populations in a preliminary effort to trace the Nahua migrations. Two distinct clades appear in multidimensional scaling and principal components analysis of 17 trait-frequencies: Aztec-West Mexico and Formative-Classic Basin of Mexico. This supports ethnohistoric evidence for Nahua movements from the northwest after the fall of Teotihuacan.

Christensen, Bonnie

[91] **Concept: Cultural Change; Regional Resources**

Christiansen, George W. (Wisconsin)

[18] **Red Wing Mississippian: A Case of Mistaken Identity?**

The Mississippian occupation of the Red Wing Locality during the 10th through 12th centuries A.D. has been interpreted as a site-unit intrusion by Mississippian peoples from the south upon either a Late Woodland or Oneota population. This conclusion is inadequately supported and serves to mask the diversity and complexity of sociopolitical interaction on the northern frontier of the Midwestern Mississippian Tradition. A theoretical model of the origin and political structure of these people is presented in an attempt to explain the material remains and settlement structure for this region. It is concluded that the Red Wing phenomenon is not a site-unit intrusion, but instead the result of peripheral contact, possibly alliances, with Mississippian peoples to the south and west.

Church, Flora (Archaeological Services)

[14] **A Hopewell Settlement in the Lower Scioto Valley: Site 33PK153**

Site 33PK153 is located in the Lower Scioto River Valley in Pike County, Ohio. Excavation of the site revealed evidence of multiple structures, storage and refuse pits, and cooking and other thermal features, representing distinct activity zones. A series of 28 radiocarbon samples were submitted for analysis, as were flotation samples from all features and postmolds. The artifact assemblage

consisted largely of lithic debitage; ceramics and faunal material were more limited. Microwear analysis was performed on a sample of lithic items. An Archaic component was also documented on the northern edge of the site.

Church, Warren B. (Yale)

[53] **A Pre-Inca Waystation in the Northeastern Andes of Peru**

Colonial period chroniclers and modern Andeanists have devoted considerable attention to the elaborate Inca system of communication and transportation with its paved highways, waystations, storehouses and provisioning facilities. Recent research has identified pre-Inca roads dating to the Middle Horizon and as early as the Initial Period, yet no evidence for waystations nor other associated administrative facilities typical of the Inca system. This paper presents archaeological data recently excavated at Manachaqui Cave in the Northeastern Peruvian Andes, and considers evidence that the site functioned as a pre-Inca waystation.

Cinquino, Michael A., Michele H. Hayward, and Inez Reed Hoffman (all, Panamerican Consultants)

[34] **1994 Excavations at the Aklis Site, Sandy Point National Wildlife Refuge, St. Croix, USVI**

In 1994, Panamerican Consultants, Inc., completed an intensive field investigation at the Aklis prehistoric site (late Saladoid period), located on the Sandy Point National Wildlife Refuge, St. Croix, USVI. The project was conducted for the U.S. Fish and Wildlife Service under contract to the National Park Service. Before the excavations began a number of hypothesis concerning the chronology, settlement pattern, resource procurement, and demographic patterns of the Aklis population were posited. The results of the stratigraphic, ceramic, botanical, and faunal analysis are employed to address the research issues in this presentation.

Clark, Donald W. (Canadian Museum of Civilization): [100] (see *Hausler-Knecht, Philomena*)

Clark, G. A. (Arizona State)

[60] **Intraregional Variability in the Epipaleolithic of Atlantic Iberia**

After two decades (1960–1980), and partly because of generational replacement, late Upper Paleolithic and Mesolithic hunter-gatherer adaptations along the Atlantic coasts of Iberia have been the subject of renewed research efforts over the past 15 years. Conducted under a broadly defined ecofunctionalist paradigm, this post-1980 work has yielded a more complete picture of intraregional variability than was available previously. Although differences are apparent in the timing and details of adaptation between the Cantabrian coast of Spain and the Atlantic coast of Portugal, similar processes of resource diversification and intensification can be documented in both areas.

[22] (see *Barton, C. Michael*)

Clark, Jeffrey (Center for Desert Archaeology): [62] (see *Stark, Miriam*)

Clark, John E. (Brigham Young)

[40] **Craft Specialization in the Mesoamerican Formative**

Control of specialized production of various types of craft goods is seen by many as one path to power and, hence, is considered as a possible critical factor in sociopolitical evolution. For Mesoamerica, various authors have argued that specialized production was pivotal during the Formative period in the transition from egalitarian to rank societies and from chiefdom societies to states. In this paper, I consider recent studies that attempt to link the presence of specialized craft production to critical processes of social and political transition.

Clarkson, Persis B. (Winnipeg)

[39] **The Textualization of Geoglyphs**

Numerous theories abound about the origin and purpose of the Nazca geoglyphs. This aspect has been thoroughly explored in a number of studies based upon astronomical, archaeological, ethnohistorical, and ethnographic fieldwork, and upon analyses of the Nazca geoglyphs as part of the greater Andean culture-area. Reflexive analysis suggests that biases do occur in interpretations of cultural data. Some of these biases are examined, and alternative interpretations of the text and context of the Nazca geoglyphs are examined in the light of revised data from fieldwork and radiocarbon analyses.

Cleghorn, Naomi E. (Texas-Austin) and *Melinda A. Zeder* (Smithsonian)

[109] **A Reconsideration of the Evidence for Animal Domestication in the Zagros from the Perspective of the Upper Paleolithic at Yafteh Cave**

In the early 1960s, the team of Flannery and Hole excavated a series of Upper Paleolithic caves (20–30,000 B.P.) in the upland areas of northwestern Iran. Kill-off patterns for the caprine remains

derived from these sites, especially those from Yafteh Cave, served as an important bench mark in the determination of the domestic status of caprine assemblages in a number of proto- and early Neolithic settlements in the region. This paper examines recently collected caprine metric data from Yafteh Cave and compares them to data derived from proto- and early Neolithic settlements as a means for evaluating metrically based claims for domestic status of these later assemblages.

Close, Angela (Ohio State)

[57] **Lithic Economy in the Absence of Stone**

Small, highly mobile groups of Early Holocene gatherer-herders on the Safsaf Sandsheet (southwestern Egypt) travelled for several days (or even weeks) at a time across a region completely lacking stone. They carried with them blocks or large flakes, which served as cores to produce flakes that were for immediate use and were rarely retouched. In a separate but complementary system, they carried large retouched tools, made on flakes struck outside the Sandsheet, and resharpened them many times. Stone was stock-piled along favored routes, and earlier artifacts (some of them Lower Paleolithic) were recycled.

Cobb, Charles R. (SUNY-Binghamton)

[40] **Specialization, Surplus, and Power in Chiefdoms**

Archaeologists often use producer specialization as a point of departure for evaluating economic, social and political complexity. Many approaches involve breaking specialization down into discrete types of production organization strategies. This paper argues that diversity in specialization can be understood as a function of the social organization of surplus labor, where access to surplus production is defined and mediated through different forms of power relations. Using late prehistoric societies in the American Southeast as a case study, the nature of specialization, surplus, and power is explored with respect to "chiefdoms."

Cobean, Robert (Instituto Nacional de Antropología e Historia)

[26] **Chronology of the Tula Region: Revision and Update**

Chronometric dates and ceramic sequences from recent excavations of several localities within the site of Tula, Hidalgo, and nearby sites has provided an opportunity to clarify current knowledge of the events surrounding Tula's origins and development. Given this new information it is necessary to reexamine that which we refer to as Tula or Toltec throughout the Basin of Mexico in the beginning of the Postclassic.

Cobos, Rafael (Tulane)

[130] **Chichen Itza and Its Settlers During the Terminal Classic Period: Analyzing the Maya and Toltec Occupation of the Site**

The occupation of Chichen Itza by Yucatec Maya and non-Yucatec Maya people is analyzed in this paper. New data obtained during the 1993 and 1994 field seasons is used to evaluate the "Toltec" presence at the ancient Itza capital.

Coggins, Clemency Chase (Boston)

[114] **The Stone of Yucatan**

This paper considers the significance and Maya use of limestone in ancient Yucatan—as bed rock, tools, masonry, lime, monuments—with emphasis on the several roles of the stone at Dzibilchaltun, in comparison with Oxkintok, Uxmal, Ake, Chichen Itza and Mayapan.

[114] Discussant

Cogswell, James M. (NAP Research Reactor Center), *Louis Ross, Jr.* (Missouri), and *Michael J. O'Brien* (Missouri)

[14] **Analysis of Postdepositional Effects on Prehistoric Ceramics from Southeastern Missouri: Implications for Provenance Studies**

Diagenesis has long been suspected to contribute to the signature measured by bulk chemical analysis. This poster focuses on the effects of diagenesis on southeastern Missouri ceramics using NAA and SEM microanalysis. Originally, diagenesis was indicated in a series of experiments using hydrochloric acid to leach sherds for temper analysis. The acid removed up to 10% by weight from clay-tempered sherds, and the amount of leached material decreased with excavation depth. The analyses described in this poster identify the added material and pinpoint its location within the fabric. Possible mechanisms for its deposition and implications for provenance studies are discussed.

Cohen, Amanda B.

[99] **Ritual and Landscape in the Moquegua Valley, Peru**

The Moquegua Valley of southern Peru offers archaeologists an opportunity to study ritual activity from the Formative period through the Tiwanaku occupation. Chronological and cultural variations between local cultures and highland influences are of interest. Archaeological data obtained through

systematic survey suggest the possibility of ritual which involved the use or worship of the landscape by both the individual and the community. Indications of personal worship are common to nearly all sites and periods in the Valley. On the level of the community, group-organized ritual indicated political and societal change as well as interregional interaction.

Cohen, Janet (Navajo Nation Historic Preservation Department): [54] (see *Swidler, Nina*)

Collins, James M. (Iowa Office of the State Archaeologist)

[135] **The Regional Significance of a Shell Mask Gorget from the Upper Iowa River Valley**
Around 1945, a small anthropomorphic masquette made from marine shell (*Busycon* sp.) was recovered from a protohistoric Oneota grave in northeast Iowa. The primary context and subsequent history of the object are identified. The artifact is described, and the significance of the shell mask genre is briefly discussed from a regional perspective. It is proposed that the masks represent symbols used by westward migrating Dhegihan groups in situations exactly analogous to historically documented calumet ceremonies, thereby fostering formal, favorable relationships, based on fictive kinship ties, with the indigenous Chiwere populations of the Prairie Peninsula.

Collins, Michael B. (TARL, Texas-Austin), *C. Britt Bousman* (Texas-San Antonio), *Barry W. Baker* (Texas A & M), and *C. E. Mear* (Texas-Austin)

[9] **Paleoindian Subsistence Patterns in Central Texas**

Direct and indirect evidence indicates that specialized big-game hunting characterized the adaptations of only the Folsom and Cody intervals within the Paleoindian Period (12,000 to 8,000 B.P.) in Texas. This is manifest in central Texas at campsites such as Wilson-Leonard, Kincaid, and others where Clovis, Wilson, Angostura, and other components with unfluted lanceolate points occur with varied faunas and generalized tool kits in settings optimizing access to diverse resources. Considered in light of continent-wide patterns, generalized adaptations in the interval 12,000 to 8,000 B.P. are the norm and big-game hunting specialization is the exception.

Colten, Roger H. (Institute of Archaeology-UCLA)

[133] **An Adaptationist Model of Emergent Complexity Among Hunter-Gatherers in the Santa Barbara, California Region**

While political models of emergent complexity have been demonstrated to explain cultural evolution in some agriculturally supported chiefdoms, an adaptationist model better explains the rise of chiefdoms, among the Chumash, a complex hunter-gatherer society. Archaeological and physical anthropological data indicate that chiefdom-level social organization developed in the Santa Barbara, California, region between approximately A.D. 1150 and 1300, a time of environmental change. In this paper I discuss the implications of data on subsistence, craft activities, exchange, mortuary practices, and health and physical violence for adaptationist models of emergent complexity and the importance of ecology and exchange in Chumash social organization.

Commence, Catherine (Centre de Recherche Français)

[95] **Bridging an Archaeological Gap: The Reinvestigation of Munhata**

Renewed interest in Perrot's (1968) so-called "hiatus" in the Neolithic occupation of Palestine has prompted new models of explanation that call for new data. Recent excavations at Munhata strive to establish the exact nature of the archaeological record of this period. They focus on the chrono- and geo-stratigraphy of layers 4 (terminal PPNB) and 2B (Sha'ar Hagolan phase). They also aim to collect new data on ecology and subsistence. Our investigations seem to indicate, rather than a long gap in settlement, several brief occupations punctuated by abandonments marked by erosion and aeolian deposits.

Conkey, Margaret W. (California-Berkeley)

[60] **Between the Caves: Open Air Survey and Magdalenian Social Geography in the French Midi-Pyrenees**

This paper reports on preliminary survey in the Midi-Pyrenees (France) that has been directed at systematic exploration for potential open air evidence of late Upper Paleolithic peoples who are primarily renowned for their cave-based activities such as cave wall art and rich bone/antler industries. This survey has been carried out in the context of explicit research concerns with inferences regarding the social geography of late Upper Paleolithic regional occupation and a notably distinct regional material culture. The paper discusses the challenges of resolution and scale for the distributional archaeologies involved in addressing specific regional phenomena.

[17] Discussant

Conlon, James (University of London) and *Jaime Awe* (Trent)

[64] **Ditched Field Agriculture at Baking Pot, Belize and Its Implications for Analyzing Ancient Maya Community Organization**

Recent investigations of nucleated settlement at the ancient Maya site of Baking Pot have revealed an intricate ditched field system. Analysis of agrarian potential and excavation data from Baking Pot, coupled with comparative data from the Maya lowlands, are employed in the examination of group intrarelations of nucleated settlement. Microsettlement analysis is demonstrated to be beneficial in developing greater acuity in the reconstruction of prehistoric community organization at Baking Pot. Increased acuity is partly predicated upon the inclusion of the ditched field system in assessing the balance between state authority and corporate group autonomy.

Conrad, Lawrence A. (Western Illinois): [45] (see *Ehrhardt, Kathy*)

Conyers, Lawrence B. (Colorado)

[136] **The Use of Ground-Penetrating Radar to Map the Buried Living Surface and Structures at the Ceren Site, El Salvador**

The use of geophysics for mapping archaeological sites has usually emphasized the search for subsurface anomalies which may have archaeological significance. It is now possible at the Ceren site, employing more than 8,700 m of ground-penetrating radar, to accurately map the prehistoric living surface which is buried below more than 4 m of volcanic ash. Three-dimensional topographic maps of the living surface, and modifications to that surface are constructed. Buildings, gullies, ditches, plazas and agricultural fields are identified.

Cook, Patricia (Arizona) and *K. Anne Pyburn* (Indiana)

[64] **Postclassic Occupation at Chau Hiix**

Maya population and settlement patterns after the collapse at approximately A.D. 900 were very varied: the large centers of the Peten were largely abandoned, with sporadic remnant populations, while in the northern lowlands, many sites were experiencing their population peak. At the site of Lamanai, in central Belize, the Postclassic population was found to be quite extensive and long lived, with occupation continuing well into the colonial period. Recent excavations at Chau Hiix, located 17 km east of Lamanai, have revealed a similar occupation sequence, beginning in the Preclassic and extending well into the Postclassic. This extensive Postclassic sequence raises new questions regarding regional interaction, political and otherwise, in an area where riverine and lagoon systems assured easy communication, and at a time when many other sites were experiencing significant population declines and decentralization.

Cooke, Richard (Smithsonian Tropical Research)

[127] **The Cupica Connection: A Hypothesis for Cultural History of Northwest Pacific Colombia and the "Cueva" Lands from Precolombian to Modern Times**

One of Colombia's least-known archaeological regions is the "Subregión Pacifico Norte." In the 1960s Gerardo and Alicia Reichel-Dolmatoff spent several field seasons in this zone of tropical forests and wetlands. Clearly this region was connected culturally with the "Cueva" lands that in contact times covered much of the Panamanian Darien, San Blas coast, northwestern Urabá, and the Pearl Islands. The Reichel-Dolmatoffs also conducted ethnographic fieldwork among the modern Embera. This and other evidence suggest that the Embera and their neighbors, the Waunánaan, are not recent "immigrants" from Amazonia, but modern representatives of an ancient forest-adapted culture that occupied much of the Panama Bight littoral. This paper offers a cultural history of the "Subregion Pacifico Norte" and the adjacent "Cueva" lands, from Preceramic to Modern times.

Copeland, James M. and *David C. Simons* (both, Bureau of Land Management)

[67] **The Fruitland Coal Gas Data Recovery Project**

As part of unprecedented industrial extraction of natural gas in northwestern New Mexico, the Bureau of Land Management adopted a mitigation approach to cultural resources that includes the excavation of entire sites when project effects cannot be avoided. Whereas "right-of-way archaeology" is usually confined to narrow corridors of investigation, the Fruitland Coal Gas Data Recovery Project acknowledges that suites of site features are best examined in a complementary manner and not isolated by traditional right-of-way archaeology. Such an holistic approach satisfies federal regulatory requirements and allows important research to proceed.

Costin, Cathy L.: [58] Discussant

Cottier, John W. (Auburn): [129] (see *Wesson, Cameron B.*)

Coursey, Cheryl (SUNY-Binghamton) and *Melody Pope*

[40] **Production and Consumption at a Mesopotamian Town: A Local Perspective**

Much work on the Uruk period in Mesopotamia (c. 3900-3100 B.C.) has focused on broadly defined administrative and economic changes associated with the emergence of states and urbanism. While this work has contributed to understanding the cultural processes operating at the regional level, it

needs to be balanced by an examination of the local level processes that also operated in the Uruk political economy. This paper will discuss topics including technological diversity and variation in the scale of manufacture in order to identify local strategies of craft and subsistence-related production and use at the site of Abu Salabikh (Iraq).

Couture, Nicole (Chicago)

[11] **Ritual, Monumentalism, and Residence at Tiwanaku**

To date, interpretations of Tiwanaku have been based largely on excavations conducted either in the site's circumscribed and impressive civic-ceremonial core, or in its extensive and densely populated domestic sectors. However, recent excavations in two sectors at Tiwanaku—Mollu Kontu and the Putuni—indicate that Tiwanaku's complex urban landscape cannot be classified as simply ritual or residential in nature. While the dichotomy of the "sacred" and "profane" certainly was present at Tiwanaku, it was not absolute; ritual and residential spaces and activities were closely interlinked.

Cowan, Frank L. (Loyola-Chicago)

[46] **Technological Strategies and Mobility: A Small Sites Test**

Tool designs and tool production strategies vary systematically with the mobility of tool users, and the residues of tool production provide strong evidence for the organizational roles of sites. Expectations for technological strategies are presented for small sites in the interior of western New York, based on settlement models for three cultural-historical periods. The hypotheses are tested with data from 45 site components. Very strong correspondences are found between hypothesized organizational roles and tool production strategies for two periods, while strongly patterned data suggest revisions to the settlement model of the third.

Cowgill, George (Arizona State): [26] Discussant

Crabtree, Pam J. (New York)

[128] **Zooarchaeological Approach to the Evolution of Complex Societies in Eastern Anglo-Saxon England**

The Middle Saxon period (A.D. 650–850) in England was an era of political, social, and economic change. These transformations included the consolidation of the Anglo-Saxon kingdoms and the emergence of proto-urban centers termed emporia. This paper will use faunal remains from an Early Saxon village (West Stow), Middle Saxon villages (Brandon and Wicken Bonhunt), and an emporium site (Ipswich) to examine the changes in animal husbandry practices, hunting patterns, and diet that accompanied the emergence of complex societies in eastern England in the early Middle Ages.

Crawford, Gary W. (Toronto)

[71] **Introduction**

The early Late Woodland in the Northeast is briefly reviewed in the context of agricultural origins. Although the events surrounding the context of these developments are becoming increasingly clear in the Midwest, this is not the case, particularly in Ontario and the neighboring U.S. Recent research endeavors focusing on the New England Late Woodland, Clemson's Island, Owasco, Hunter's Home, Western Basin, and Princess Point cultures, are clarifying the issues surrounding this critical time in the Northeast.

Creamer, Winifred (Northern Illinois): [19] (see Haas, Jonathan)

Creel, Darrell (Texas-Austin) and *Matthew Williams* (Texas-Austin)

[92] **Neutron Activation Analysis of Black Mountain Phase Ceramics from Old Town and Other Sites in the Mimbres Area**

Excavations at the Old Town site have sampled architectural remains of the Black Mountain phase (ca. A.D. 1150–1300). One important research topic being addressed is pottery manufacture, with specific questions as to which, if any, ceramics are locally made. These questions are being investigated through neutron activation analysis. In cooperation with other researchers, we are attempting to determine how ceramic production in the Black Mountain phase differs from that in the preceding Classic Mimbres phase.

Crowell, Aron (Smithsonian) and *Daniel H. Mann* (Alaska-Fairbanks)

[100] **Sea Level Dynamics and Coastal Archaeology in the Central Gulf of Alaska**

Coastal surveys in the Gulf of Alaska, conducted in 1993–1994 by the Smithsonian Institution, National Park Service, and U.S. Geological Survey, indicate that study areas on the Alaska Peninsula (Katmai National Park) and outer Kenai coast (Kenai Fjords N.P.) have experienced radically different Holocene glacial and sea level histories, with important consequences for archaeological site preservation. Correlations between site age and height above sea level are examined in order to reevaluate prehistoric settlement densities and apparent demographic trends.

In particular, Ocean Bay phase sites (7000–3500 B.P.) are far more numerous than previously suspected for Katmai/Kodiak.

Crozier, S. Neal (Bureau of Indian Affairs)

[54] **Cooperation and Partnership...Indians and the BIA Working Together**

In 1987, the Bureau of Indian Affairs conducted the first participatory archeological field school with Native Americans. The success of that endeavor inspired the BIA, Phoenix Area Office, Branch of Roads, to proceed with this educational approach and, to date, three additional joint Bureau/Tribal field schools have been administered on three different Indian Reservations in the Southwest. By offering training in archeological methods and techniques, complemented by the tribes' intimate knowledge of their cultural heritage, the cause of historic preservation can only be enhanced. This paper reviews the issues involved, the consequences and the benefits of such educational interaction. [106] Discussant

Crumley, Carole L. (North Carolina-Chapel Hill)

[81] **Heterarchical Management Strategies and Long-Term Research in Burgundy**

The ongoing study of long-term changes in settlement and land use in Burgundy, France, first funded in 1975, employs a multiscalar, interdisciplinary research design. Our approach to social complexity has led us to view 2500 years of shifting power relations within a framework we term heterarchical. We carry the intellectual architecture of the project into its day-to-day operation, experimenting with a heterarchical management strategy. Characterized by shared and shifting power, delineation of short-, middle-, and long-term goals, and collective and individual decision making, responsibility, and rewards, this management approach is discussed and implications for theories of social complexity suggested.

Crummett, Tracey (Michigan): [97] (see Miracle, Preston)

Cruz, Sergio Suarez (INAH-Centro Regional de Puebla): [26] (see McCafferty, Geoffrey G.)

Cruz-Uribe, Kathy (Northern Arizona): [38] Participant

Cummings, Linda Scott (Paleo Research Labs) and *Rosa Maria Albert* (SERP-Universitat de Barcelona, Spain)

[105] **Phytoliths and Diet: Mammoth Teeth from the Dent Site**

Phytolith analysis of tartar removed from mammoth teeth recovered from the Dent site, and now curated at the Denver Museum of Natural History, points to probable elements of mammoth diet. Phytoliths recovered from tartar represent plants consumed by mammoths present at Dent at the time of human occupation. This phytolith record is compared with modern vegetation and phytoliths from modern grasses on the Colorado Plains. [131] (see Albert, Rosa Maria)

Cummings, Linda Scott and *Kathy Puseman* (both, Paleo Research Labs)

[131] **Coprolites Contain Phytoliths Too: Anasazi Diet at Step House, Mesa Verde**

Examination of 12 coprolites from the Basketmaker III occupation of Step House at Mesa Verde for pollen, phytoliths, macrofloral, and faunal remains has yielded excellent information concerning diet. Phytoliths recovered indicate not only foods consumed, but lead to interpretations of food harvesting and storing patterns. Data recovered through examination of these diverse data bases indicate the importance of beans, as well as other agricultural produce. Anasazi cuisine was not limited to corn, beans, squash, and venison. A rich diversity of native foods consumed is evident through examination of micro-botanic, macro-botanic, and faunal remains.

Cunnar, Geoffrey (Andover Foundation for Archaeological Research), *Richard S. MacNeish* (Andover Foundation for Archaeological Research), and *David Hill*

[77] **In Search of the "Great Leap Forward"**

Cooperative 1993 fieldwork by Beijing University, the Jiangxi Institute of Archaeology and the Andover Foundation for Archaeological Research investigated sites within The People's Republic of China in the southern province of Jiangxi for their potential to yield data concerning the origins of rice agriculture. Preliminary results show that two of the sites investigated have cultural stratigraphy which spans the Neolithic to the late Pleistocene. Site stratigraphy and stratigraphic relationships between the two sites will be discussed as well as preliminary results of various analysis which are helping to assemble a chronology coeval with the development of rice agriculture.

Curet, L. Antonio (Gettysburg)

[34] **Technological Changes in Prehistoric Ceramics from Puerto Rico: A Preliminary Study**

Traditionally, studies on Caribbean pottery have focused on changes in style and decoration while

changes in ceramic technology have received little attention. This work presents the results of a preliminary project on the study of changes in pottery technology to overcome some aspects of this deficiency. Collections from the *Proyecto Arqueológico del Valle de Maunabo, Puerto Rico*, representing all periods of the Ceramic age, and several physical properties including original firing temperature, porosity, and density, were used. The results show that some of the periods were characterized by technological changes. Preliminary interpretations of these changes are discussed.

Curtin, Edward V. (Skidmore)

[113] **Archaeology as Natural History**

Archaeology is an historical rather than experimental science, a status it shares fundamentally with paleontology, geology and biology. The methodological challenges of historical sciences include conceptualizing the deep past and discovering order in variably chaotic data. Recent reconsiderations of paleontology clarify challenges shared with archaeology. As archaeology abandons a theory of gradual and progressive change, it must define and address issues of episodic change, incomplete data, inaccurate conventional wisdom, and an unrealistic reliance on the uniformitarian doctrine. Examples of issues in Late Archaic, Middle Woodland and Late Woodland archaeology illustrate reconstructions aided by consideration of archaeology as natural history.

Czaplicki, Jon S. (Bureau of Reclamation)

[54] **Of Partnerships, CRM, and the Hohokam: The Gila River Indian Community and The Bureau of Reclamation's Central Arizona Project**

The Bureau of Reclamation has established a cooperative partnership with the Gila River Indian Community (GRIC) that will have important consequences for Hohokam and Piman archaeology. Reclamation and the GRIC are planning a water delivery system to bring Central Arizona Project water to GRIC lands. These lands straddle the Gila River and are known as the 'heartland' of the Hohokam. To deal effectively with a massive cultural resource project associated with this development effort, Reclamation is assisting the GRIC in establishing its own archaeology program. This program will assist Reclamation in developing research goals and doing survey and mitigation.

Dahlin, Bruce H. (Howard), *Valerie McCormack* (Pittsburgh), and *Anthony P. Andrews* (South Florida)

[130] **Canbalam in Context**

Investigations at Canbalam reveal it is the largest of several extraordinarily rich long-distance trading facilities on the Campeche/Yucatan Gulf Coast. Unfortunately, Canbalam was subjected to beach erosion, leaving temporally mixed and highly weathered sherds on the shallow sea floor to be redeposited on a narrow recent beach. Terminal Classic and Early Postclassic period materials predominate. Its size and richness are due to Canbalam's participation in coastal-inland trade via canals and far-flung maritime trade. It is also near the second largest known salt works in Mesoamerica, but the question of Canbalam's control of these salinas remains vexing.

Dalan, Rinita A. (Southern Illinois-Edwardsville): [14] (see *Skele, Mikels*)

Dalan, Rinita A. and *Harold W. Watters, Jr.* (both, Southern Illinois-Edwardsville)

[14] **Environmental Magnetic Techniques as an Aid in Understanding Earthen Archaeological Terrains**

Environmental magnetic techniques have been applied to sediments collected from the Cahokia Mounds State Historic Site in southwestern Illinois as an aid in understanding anthropogenic earth-moving activities at this important Mississippian mound center. These techniques, which allow documentation of changes in magnetic mineralogy, concentration, and grain size, have been used to: 1) determine the original form of earthen mounds; 2) investigate the composition and structure of mounds as well as the integrity of submound deposits; 3) determine the location, extent, and character of culturally modified terrain in off-mound areas; and 4) identify the nature and source of materials used in reclamation and mound-building.

Dalla Bona, Luke (Pictographics, Ltd.)

[47] **Extreme Closeup!! GIS and Intrasite Analyses**

This paper examines and describes the use of a geographic information system (GIS) for conducting intrasite analyses. The site used in this example is DcJi-16 located at Thunder Bay, Ontario, Canada. In the summer of 1993, 1200 square meters were excavated in 50cm x 50cm quadrants. Thousands of artifacts and debitage were recovered and are used to exemplify the means by which a GIS can be used to conduct established and alternative analyses at a large scale.

Dancey, William S. (Ohio State)

[123] **Beyond Adena-Hopewell: A Phase-less Approach to Midwestern Prehistory**

The mortuary complexes of eastern North America have been studied intensively for over a century

and numerous classifications applied to the earthworks, burial mounds, and related phenomena of the Woodland tradition. A number of measurement instruments, e.g., the ones constructed by E. Squier and E. Davis, E. Greenman, W. Webb, and D. Drago, are examined here to determine their utility in formulating and testing hypotheses pertaining to cultural evolution. As expected, none meet the reliability and validity requirements of modern research design. The questions of why this is so and what can be done about it are addressed.

Darling, J. Andrew (Museum of Anthropology, Michigan)

[19] **Mass Inhumation and the Execution of Witches in the North American Southwest**

Critics of the cannibalism hypothesis have proposed that non-cannibalistic behaviors including the execution of witches may better account for the occurrence of many Anasazi mass inhumations. Some have viewed witch execution as violent social control which levels status differences among individuals and eliminates competing interest groups. Yet, published literature on Puebloan views about witches and their destruction indicate a more complex field of behaviors. It is proposed that witch execution may regulate inter- and intra-community tensions and both limit and direct violent action in socially defined ways. Implications for the identification of witch executions in the archaeological record are considered.

Davidson, Dale (Bureau of Land Management)

[80] **Traditional Cultural Knowledge in Ecosystem Management**

Bringing traditional cultural knowledge to the discussion of ecosystem management is a unique contribution archaeologists can make. From this can come the establishment of research domains which are specifically cultural. The Save the Past for the Future conference addressed this issue. This paper presents the results of this part of the workshop. Some significant topics discussed include: Why should those with traditional knowledge share it? What are some relevant questions to be kept in mind when approaching individuals for traditional cultural knowledge? What are the strengths and weaknesses of traditional cultural knowledge? What can we look for as goals when collecting traditional cultural knowledge?

Davis, Hester (Arkansas Archaeological Survey)

[44] **Public Education and the Teaching of Archaeology**

This presentation suggests that the concerns and ethics of public education should play a central role in graduate and undergraduate curricula. Specific recommendations for course structure and content, meant to foster the development of applied perspectives and training, are made.

Davis, Leslie B. (Museum of the Rockies), *Stephen A. Aaberg* (Aaberg Cultural Resources Consulting), and *John W. Fisher, Jr.* (Montana State)

[116] **Paleoindian Hunter-Gatherer Subsistence, Diet Breadth, and Seasonality in Northern Rockies**

Subsistence and seasonality data, drawn mainly from the MacHaffie, Indian Creek, and Barton Gulch Paleoindian (11,000 to 7,800 B.P.) sites in southwestern Montana, are reviewed in conjunction with associated technologies, resource potentials, and site selection. This subregional overview illustrates the varied nature of Paleoindian responses to montane valley and flank resources and other land use opportunities. An unusually broad array (for Paleoindians) of target species (hunting: *Bison* sp., *Odocoileus virginianus*, *O. hemionus*, *Ovis canadensis*, *Canis* sp. and gathering; plant species [numerous] and small mammals: *Marmota flaviventris*, *Lepus* sp., *Sylvilagus* sp., *Cynomys ludovicianus*, *Microtus* sp.) is identified.

Davis, R. P. Stephen (North Carolina-Chapel Hill), *Vincas P. Steponaitis* (North Carolina-Chapel Hill), and *Patrick Livingood* (North Carolina-Chapel Hill)

[14] **How to Create and Use an Electronic Site Report on CD-ROM**

Recent technological advances make it both feasible and practical to disseminate data from large excavations in digital form. Here we demonstrate one approach, using data from Fredricks (310r231), an 18th-century Indian village in North Carolina. A comprehensive body of descriptive information—including maps, profiles, tables, text, and color photographs—has been digitized and saved on CD-ROM. Two "front-end" programs have been written to allow easy and intuitive access to these data. One is designed for those who wish to use the CD as a site report. Another is a teaching tool that enables students digitally to "excavate" the site.

Day, Jane (Denver Museum of Natural History)

[44] **Public Education and Personnel Decisions: View from the Museum Administrator**

This presentation provides a museum administrator's perspective on how effective personnel cases might be built for museum archaeologists who have devoted a considerable portion of their professional activity to public education.

Dean, Emily (California-Berkeley)

[79] **Appropriating the Purveyors of the Past: Archaeologists as Literary Metaphor**

This paper explores how archaeologists, not just their data, enter the popular imagination. Analyzing selections from several genres of contemporary American fiction, archaeologists are considered as agents of adventure, detectives, imperialists, and paths to the lost and forgotten. Fictional archaeologists, it is argued, are not so much scientists as excavators of the unconscious; catalysts for the metaphor of unburying. Quotes from the archaeological literature highlight the disparity and concordance between fiction's romantic conception of the archaeologist with our view of ourselves. The paper concludes by examining creative writing authored by archaeologists and its role in bridging the gap between the popular and the academic.

DeBoer, Warren R. (Queens)

[127] **The Use of Anthropomorphic Figurines by Chachi Shamans**

In a paper published in 1964, Reichel-Dolmatoff proposed an ethnographic interpretation of anthropomorphic figurines that are often abundant in archaeological sites of Colombia and Ecuador. He noted that Chocó shamans make such figurines for use in curing sessions and then unceremoniously discard them, producing over time a figurine-rich midden. This paper presents a contrastive case of figurine use by Chachi shamans of Ecuador. Unlike the Chocó case, Chachi figurines are curated assiduously and are often passed on from shamans to apprentices over several generations.

[112] Discussant

Dekin, Albert A. (SUNY-Binghamton) and *Mark S. Cassell* (SUNY-Binghamton)

[100] **Results of the Exxon Valdez Oil Spill Archaeological Damage Assessment**

A major component of the Exxon Valdez Oil Spill Archaeological Damage Assessment was the testing and examination of cultural resources guided toward identifying injuries potentially linked to the 1989 spill and subsequent cleanup. This paper discusses the form and extent of identified disturbances, their impact upon the integrity and recovery of archaeological data, and the contributions of the study to archaeological resolution of culture history in the region. The radiocarbon results and excavated artifactual material generally support existing perceptions of the environmental and occupational history of the study region and the extent of cultural interaction between culture areas within the region.

Del Caro, Mitz (Minnesota OSHA)

[7] **OSHA—Excavation Safety**

Focuses on excavation safety using the requirements of OSHA's Code of Federal Regulations, Part 1926, Construction, Subpart P—Excavations, as the primary source of information. Employer's and employee's options and responsibilities when under OSHA jurisdiction will be examined.

Delle, James A. (Massachusetts)

[34] **Space, Race, and Profit: A Comparative Analysis of Colonial Socio-Spatial Processes in 16th-Century Ireland and 19th-Century Jamaica**

The colonial experiences of 16th-century Ireland and 19th-century Jamaica are remarkably similar. In both cases, significant changes in production resulted in profound social restructuring. Through an analysis of archaeological and documentary materials collected between 1991 and 1994, this paper considers how the elite classes consciously set about to redefine existing spatial forms as part of the strategy to reinforce their position of social dominance during these two periods of social and economic transition. The paper suggests how the spatial analysis of archaeological materials can be used to interpret the negotiation of social relations in state-level societies.

Deller, D. Brian (Glencoe, Ontario): [36] (see *Ellis, Christopher*)

Demarest, Arthur (Vanderbilt), *Claudia Wolley* (Vanderbilt), *Kim Morgan* (Vanderbilt), *Nicholai Grube* (Universität Bonn), and *Hector Escobedo* (Vanderbilt)

[52] **A Royal Palace at the Moment of the Classic Maya Collapse: Function, History, and Investigative Methodology**

Evidence from six years of excavations, survey, ecology, and monuments of the Petexbatun Regional Archaeological Project have detailed the fall of Classic Maya civilization in the Petexbatun region of Guatemala. Intensification of warfare here led to political disintegration by the early 9th century. New evidence is presented from extensive excavation of the largest royal palace of the Petexbatun capital, Dos Pilas, revealing structure functions, social distance, retainer activities, nutrition, and lifeways in its final decade. Correlations with monumental texts allows description of the palace's destruction. We assess alternative culture/historical interpretations, theories of the Maya Collapse, and research methodologies.

DeMarrais, Elizabeth (California-Los Angeles)

[15] **Regional Politics, Labor, and Power in the Calchaqui Valley, Northwestern Argentina**

The emergence of chiefdoms in the Calchaqui Valley is visible in regional centers with public plazas, mounds, and large residential populations. In this paper, I evaluate the role of labor control and construction in the evolution of centralized, hierarchical political control. Evidence of mound construction, feasting, and wealth good manufacture suggests that chiefs made strategic decisions to allocate resources, including labor, to activities that legitimized and extended their political power. Chiefly investments in these material expressions of power demonstrate the importance of political competition and strategy as a cause of organizational change in complex societies.

Demoule, Jean-Paul (Université de Paris)

[27] **Power and Resistance to Power in European Iron Age**

The European Iron Age is usually considered to be the period which witnessed the progressive emergence of state societies. However, this emergence is much slower, and also much less regular than in the Near East. Periods of strong social hierarchisation in settlements and cemeteries are followed by much more "egalitarian" periods. Beyond environmental and economic constraints, one may point to the hypothesis that there are various dynamics, both social and political, which resist this emergence. But even then, one has to explain, in psycho-social terms, what drives this "striving towards inequality."

Demoule, Jean-Paul (Université de Paris) and *Michael J. Hett* (Université de Paris I)

[81] **The Aisne Valley Long-Term Project and the Evolution of Social Systems in Northern France**

The Aisne Valley, in the north of France, has for 20 years been the object of an archaeological salvage program which covers about 300 sq km. More than a thousand sites have been identified, from the Paleolithic, but above all from the Neolithic to the Middle Ages. Excavations and soundings have been conducted at about 200 sites. This micro-region is now one of the best-known in France for most of the periods concerned. We will here present the main results in terms of the evolution of social systems, of varying complexity. We will also try to evaluate the overall strategy, a constant compromise between the scientific aims and the constraints of rescue operations which set the priorities and provide the money.

Dering, J. Philip (Texas A & M)

[30] **At the Desert's Edge: Classic Period Plant Foraging and Production in the Tonto Basin, Arizona**

Macrobotanical analysis of over 400 flotation samples from Classic period archaeological sites indicates a broad-based agricultural/gathering subsistence system that exploited all elevations within the basin. Maize and little barley are the two most ubiquitous of the cultivated plant remains. Other cultigens include agave, beans and squash. Irrigation agriculture was restricted by narrow terraces, canal systems that were subject to flood damage, and a streamflow regime that made a second crop significantly risky. To offset these problems the people took advantage of resources in the desert/mountain ecotonal area provided by the flanks of the Tonto Basin.

Desloges, Joseph R. (Toronto) and *Ian J. Walker*

[71] **Fluvial Geomorphic Processes and Archaeological Site Integrity at Grand Banks Site, Grand River, Ontario**

Occupations at the Grand Banks site are found within buried paleosols on an extensive flood plain. Alluvial stratigraphy and bar surface morphology indicate that the site sits atop a 700 m long lateral bar. Processes accounting for the bar construction are outlined. Historical maps and repeated airphoto surveys demonstrate that processes common to many meandering rivers of this type are limited, thus providing for minimal reworking and good site preservation. Initial assessment of valley and river morphology coupled with the application of simple geomorphic models can aid greatly in defining sites with high preservation potential and minimal disturbance by flood erosion.

Dessel, J. P.

[58] **The Relationship Between Ceramic Production and Socio-Political Reconfiguration in Fourth Millennium Palestine**

Changes in production of ceramics are often related to larger social, political and economic changes within a society. Though not the cause of such changes, ceramic production can act as a barometer for sociopolitical developments. This paper explores the relationship between the ceramic industry and the reconfiguration of elite polities during the transitional Terminal Chalcolithic/Early Bronze I of the Southern Levant. At this time production is most frequently organized at either the household or workshop level. It is in the organization of craft production that nascent elites may begin to articulate themselves in an otherwise undifferentiated sociopolitical landscape.

Diaz-Granados, Carol (Washington-St. Louis)

[17] **Societal Organization and Myth as Reflected in Missouri's Major Petroglyph Group**
Rock graphics, long-denied by professional archaeologists as containing interpretive potential, may be coming to the forefront. New qualitative analytical methods are imparting data that shed light on the carvers and painters as well as the cultures in which the graphics were created. Five major, associated petroglyph sites in Missouri's Big River region appear to be the work of Mississippian communities judging from motifs that portray diagnostic artifacts and panels that may depict myths. The "random-complex" panels at these and other Missouri sites conform to Fischer's hypothesis. These sites are contrasted to several to the "linear-sequential" (possibly earlier) sites.

Dibble, Harold L. (Pennsylvania)

[136] **Analysis of Mousterian Tool Reduction Sequences Through Video Digitization**
Utilizing material for the Mousterian of Biache St. Vaast Level IIA (France), this paper shows how techniques of video digitization can compliment more traditional analytical systems in analyzing variability in artifact form. Specifically, this study shows how the analysis of digitized images greatly improves the precision of certain quantifiable aspects of tool reduction, allowing some indication of the sequencing and placement of resharpening episodes. This methodology will be discussed, along with the implications of this study for Middle Paleolithic typological systematics.

Diehl, Michael W. (Louisville)

[10] **Two Modes of Cultural Evolution in the Last Fifteen Thousand Years**
Cultural evolution and the "selection" of cultural traits are fundamentally different from biological evolution and the natural selection of genetic traits. A Crude Look at the Whole (of humanity) suggests that before the advent of agriculture, cultures changed primarily as a consequence of individuals adapting to the nonhuman characteristics of ecologies. Models derived from theories of biological evolution may provide insights about the evolution of cultures during this period. Subsequently, cultures changed as individuals adapting primarily to the human characteristics of ecologies. Few if any useful analogs will be found in the theories of biological evolution.

Dietler, Michael (Yale)

[27] **The Cup of Gyptis: Rethinking the Colonial Encounter in Early Iron Age Europe**
As approaches to the colonial encounter in Early Iron Age Europe, both traditional "Hellenization" and recent world-systems perspectives are unsatisfactory. Both attribute agency to "core" Mediterranean states (Etruscan and Greek) and see a structurally determined response to contact on the indigenous "periphery"; and they assume asymmetrical relations of power characterizing later periods to be a feature of the first stages of the encounter. A new interpretive strategy is proposed seeking insights into local agency in the early colonial political economy by exploring the social logic of consumption in the initial process of entanglement and how the early experience of interaction established the conditions for other kinds of colonial relationships to develop.
[50] Discussant

Dietrich, Gilles (INSEP, Paris): [124] (see Roux, Valentine)

Dillehay, Tom D. (Kentucky): [89] (see Rossen, Jack); [11] Discussant

Dinan, Elizabeth H. (Illinois-Urbana/Champaign)

[119] **Yellow-Spotted Flint and Other Lithic Sources in the Lower Danube Region of the Balkans**

In the late Paleolithic through Neolithic sequence of the Lower Danube region (parts of Romania, Bulgaria, Hungary, and Yugoslavia) many kinds of siliceous materials were used in the production of chipped stone tools. One particular high-quality material, yellow-spotted flint, was used throughout this sequence, but in the early Neolithic became the predominately used material in some parts of this region, and even where it did not predominate, it increased in frequency and significance. Ongoing field surveys have identified source locations for some of these raw materials, but continuing surveys will determine the extent of yellow-spotted flint sources.

Dinsmore, Elizabeth S. (Arizona State)

[12] **Rural Settlement Patterns in the Early Islamic State: A Case of Social Reorganization in Medieval al-Andalus, Iberia**

The medieval Islamic states in Iberia have long been considered an ephemeral political occupation producing few cultural changes among indigenous, rural populations. A site locational analysis discards the notion of rural conservatism and argues that the advent of the Islamic period coincided with a fundamental reorganization of late Roman settlements. The nature of reorganization is interpreted using visual observations, statistical analysis and documentary evidence. Contributions of this study include: 1) demonstrating that settlement reorganization may be associated with high-

level political changes rather than shifting environmental/subsistence conditions, and 2) identifying settlement patterns associated with hierarchical land-tenure systems.

Dirrigl, Frank J. (Connecticut)

[68] **Roundness and Weathering: Prospective Qualitative Measures for the Zooarchaeological Analysis of Plowed, Floodplain Sites**

Taphonomic biases acting upon archaeological sites from the northeastern United States demand that zooarchaeologists consider site formation processes and the differential survivorship and representation of faunal remains. This is particularly important when studying a site located in a floodplain which has been subjected to agricultural plowing and levelling. Recent excavations and research at the Goldkrest site in East Greenbush, New York, provided the opportunity to examine the effects of stratigraphic mixing and the deposition of possible "night soils" on faunal remains. Using NISPs for fragmented bone and shell as a quantitative measure and specimen roundness and weathering as qualitative measures, I will demonstrate the utility of these measures as indicators of turbation, settling, and movement through time.

Dixon, E. James (Denver Museum of Natural History)

[105] **Paleoindian Archaeology at the Denver Museum of Natural History: History and Current Programs**

The Denver Museum of Natural History (DMNH) pioneered North American archeology. Jesse Figgins revolutionized anthropological thinking by confirming the association of humans and extinct bison at Folsom, New Mexico, in 1926. Figgins sponsored Renaud, Cotter, and others, and supported excavations at Dent in 1933 and Lindenmeier in 1935. Marie Wormington was appointed archaeologist and photographer in 1935. Between 1937—1941, the museum supported research and publications by Betty H. and Harold A. Huscher. Figgins retired in 1936, and Wormington served as curator until 1967. During her tenure, she published nine major monographs. Archaeology was reinstated in 1985, and the Paleoindian program reactivated in 1934.

Dobbs, Clark A. (Institute for Minnesota Archaeology) and *George R. Holley* (Southern Illinois-Edwardsville)

[18] **Reclaiming Silvernale: Implications of 12th-Century Mississippian-like Occupation of the Red Wing Locality**

As originally designed, the Silvernale focus of southeastern Minnesota represented a local variant of Middle Mississippian culture. In recent years, the definition and interpretation of Silvernale has become obscured in the broader debate about the evolution of Mississippian and Oneota cultures. Recent ceramic and high-precision radiocarbon data from the Bryan site provides a basis for disentangling this confusing hybrid perspective of Silvernale. This paper reviews the parallels between Silvernale and Cahokia ceramics and redefines Silvernale as a phase contemporary with the Stirling phase (Cahokia) dating late within the 12th century A.D. (calibrated chronology).

Dobres, Marcia-Anne (California-Berkeley)

[124] **Of Paradigms Lost and Found: Archaeology and Prehistoric Technology, Sleepwalking Through the Past**

Ample studies have demonstrated the extent to which "world lives" and cultural logic contribute to the structure of technological systems. But how has archaeology's "worldview" structured its object matter—prehistoric technology? This presentation examines a century of archaeological research (on the Upper Paleolithic), and identifies the operative paradigms inspiring various explanatory models over time. Contrary to popular opinion, 19th century, early 20th century, and contemporary approaches share much in common—a perspective Winner calls "technological somnambulism." Evolutionary, Culture History, and Adaptationist paradigms have each divorced artifice from artifact, creating anachronistic accounts that could only make sense out of time.

Dockall, Helen Danzeiser and *Barry W. Baker* (both, Texas A & M)

[135] **Prehistoric Projectile Point Wounds from the Southern Great Plains and the Western Gulf Coastal Plain of Texas**

A synthesis of projectile point wound data from the Southern Great Plains and the Western Gulf Coastal Plain of Texas supports previous argument for endemic prehistoric violence in North America. At least 17 Late Archaic and Late Prehistoric sites in Texas, representing a minimum of 28 individuals, evidence prehistoric violence. Adult males dominate the sample, though some females are represented. On the Southern Plains of Texas, these sites cluster along the margins of the Eastern Edwards Plateau, while sites on the Western Gulf Coastal Plain form a second inland cluster in southeast Texas. Intergroup conflict and raiding resulting from territorial disputes have been proposed as the cause of this regional violence.

Dockall, John E. (Texas A & M)

[92] **Mimbres Valley Formative Period Projectile Point Manufacturing Technology and Temporal Style Change**

Technological and metric analyses of Mimbres lithic assemblages have documented a specific production technique for arrowpoint manufacture. Spatio-temporal changes in point style morphology from about 550 A.D. to 1130 A.D. are revealed even though the method of manufacture remains unchanged. Arrowpoint style changes have little apparent relationship to changes in technologically assisted hunting practices but can be interpreted within a broader theoretical framework of social contact between adjacent groups in the Mimbres valley and beyond.

[30] (see *Gardner, Karen M.*)

Doelle, William H. (Desert Archaeology), and *Teresita Majewski* (Statistical Research)

[74] **Careers in Archaeology: Planning for Future Opportunities**

Career opportunities in archaeology are vastly different than they were one or two decades ago. Academic-, government-, and private-sector jobs are in constant flux, which means that yesterday's information may be obsolete tomorrow. Those working toward future employment in archaeology need a firm basis for planning a career path. Information is needed as well as a context within which to make sense of that information.

Doershuk, John F.: [57] (see *Bergman, Christopher A.*)

Dolan, Barbara W. (Bishop Museum)

[69] **From Ruling Chiefs to the State of Hawaii: 500 years of Habitation, Subsistence, and Culture Change in Kāne'ōhe, O'ahu**

From A.D. 1450-1800, the ocean, forests, and terraced fields planted in taro provided sustenance for the native Hawaiians of Kāne'ōhe. Between the mid-19th century and the present, as immigrants from Asia and the United States arrived in Hawai'i, production of rice, Chinese taro, sugar cane, pineapple, and banana dominated Kāne'ōhe's commercial economy. From 1990-1992, during archaeological monitoring of highway construction and excavation of subsurface features, Bishop Museum archaeologists recovered 1,668 indigenous artifacts from Site 50-0a-G5-152. Subsequent use of edgewear, residue, and lithic sourcing analyses, together with radiocarbon analysis, has strengthened our interpretation of pre-contact activities in the area.

Dominguez, Steve (New Mexico): [42] (see *Penman, Shawn L.*)

Donahue, Randolph E. (University of Bradford), *Daniela B. Burrioni* (Universita' di Siena, Italy), and *Chris O. Hunt* (University of Huddersfield, England)

[76] **The Transition to Agriculture in Peninsular Italy**

The transition to agriculture in Italy has been largely explained as a demographic process of population replacement. New research indicates that the adaptation to a forest economy included a variety of socioeconomic changes permitting hunter-gatherers to adopt some "Neolithic" resources and technology. During a period lasting perhaps 500 years, hunter-gatherers gradually became more dependent on food production. There is no need to suggest, nor evidence of, population replacement of the hunter-gatherers by agricultural colonists for most of the Italian peninsula.

Dongoske, Kurt (The Hopi Tribe) and *Michael Yeatts*

[42] **The Kawaika'a and Awatovi Mapping Project**

Kawaika'a and Awatovi are large PIV ancestral Hopi villages located on the Hopi Indian Reservation in north-central Arizona. Both of these sites are estimated to be in excess of 5,000 rooms and probably represent the largest pueblos in the Southwest. Awatovi was partially mapped in the mid 1930s and Kawaika'a was last mapped in the late 1800s. Recently, both sites have been the subject of pothunters. Utilizing a total station and global positioning system to generate precise maps of these sites, the Cultural Preservation Office of the Hopi Tribe is initiating a program which integrates protection, management, and archaeological research.

Donohue, James A. (South Dakota Historical Society)

[70] **Environmental and Settlement Pattern Implications of Late Pleistocene/Early Holocene Cumulic Paleo-Mollisols in Loess Mantled Landscapes of the Northwestern Plains**

Excavations at three sites in western South Dakota documented soil-forming events which occurred from 11,890 years B.P. to 10,000 years B.P.. Mollic colored soils formed in loess which was deposited in a predictable fashion on the lee sides of hills, bluffs, and ancient terraces. Where undulating bedrock surfaces or basins were present, these depressions acted as sediment traps in which cumulic mollisols formed. These shallow basin micro-environments were utilized by Paleoindian bands as campsite/processing stations. These locals were buried by increased colian/colluvial sedimentation rates which occurred after 10,000 years ago.

Donta, Christopher (Massachusetts)

[100] **Assessing Complexity on Kodiak Island, Alaska: A Different Type of Eskimo**

The Koniag of Kodiak Island have been traditionally categorized among anthropologists as a subgroup of the Yupik Eskimo language family. This characterization has also held with regards to material culture, ceremonial forms, and social organization. However, recent archaeological and ethnohistorical data indicate that the Koniag differ from other Yupik peoples in many ways. Data on population density, house forms, and ceremonial culture are used to reassess the sociopolitical organization of traditional Koniag society. Reasons for the development of this level of complexity are discussed, as are the resulting implications for the general characterization of Eskimo peoples among the broader anthropological community.

Doolittle, William E. (Texas-Austin)

[93] **Domesticated Landscapes: Environmental Factors and Human Agency in Aboriginal North American Agriculture**

Agriculture can be envisioned as the domestication of landscapes, involving plants, landforms (including soil), and climate. Its development results in natural vegetation being replaced with crops, slopes being leveled, dry lands being irrigated, wetlands being drained, and extreme temperatures being mitigated, among other things. A matrix of the natural environments of North America is outlined. It is then superimposed with a matrix of native agricultural practices. Insights are drawn from regional and local patterns of landscape transformation.

Dore, Christopher D. (University of Nebraska State Museum)

[130] **Behavior and the Built Environment in a Yucatecan Village**

While the remains of the prehistoric built environment in northern Yucatan are easily accessible to archaeologists, the interpretive tools that exist for understanding how variability in the built environment relates to community scale behavioral organization are much more illusive. This paper presents results from the Xculoc Ethnoarchaeological Project, which focuses on building links between settlement and community in a Yucatecan village. The paper gives background on the and discusses some of the factors that contribute to intracommunity built variability in this modern Puuc village. It concludes with a discussion of how this new knowledge can be used to increase our understanding of prehistoric Maya community organization in northern Yucatan.

Dorshow, Wetherbee (New Mexico)

[135] **Issues of Prehistoric Mobility and Technology on the Southern Park Plateau of Northeastern New Mexico**

This paper investigates issues of prehistoric mobility from excavation-derived lithic assemblages of 42 prehistoric sites on the Southern Park plateau of northeastern New Mexico. First, diversity measurements of raw material type and artifact type richness (bivariate regression) and evenness (Shannon-Weaver statistic) are employed. Second, statistical analyses (chi-square and adjusted residuals) of expedient to formal chipped-stone tool ratios are conducted. These procedures are applied independently to cultural/temporal period and inferred use type groupings of the site sample. The study identifies an apparent relationship between local abundance of quality lithic resources and relatively slow technological change through time.

Douglass, John G. (Pittsburgh) and *K. Anne Pyburn* (Indiana)

[90] **Raised and Channelized Agricultural Fields in Western Lagoon, Northern Belize**

Survey and subsurface testing of the southern portion of Western Lagoon, northern Belize, has revealed extensive raised and channelized agricultural fields, as well as initial indications of a complex water management system. Adjacent to the Maya site Chau Hiix, differential forms of agricultural fields may indicate a system of intensive production.

Dowd, Anne S. (Brown), *Anthony Aveni* (Colgate), and *Ramón Carrasco* (Instituto Nacional de Antropología e Historia)

[52] **Solar Observatory or Allegory? An Example of a Group E Complex from Calakmul**

The Group E complex at the Maya site of Calakmul, Campeche, Mexico, has recently been excavated by members of the *Proyecto Arqueológico de la Biosfera Calakmul*. New architectural data exist to evaluate this group's ability for observing solstices and equinoxes. While the overall orientation of Structures 4a, 4b, and 4c are slightly east of north, the doorways of Structures 4a and 4b align with the setting sun during the solstice points, despite the break in the buildings' floor plan symmetry this represents. Astroarchaeological evidence for the function of this complex will be presented and discussed.

Dreiss, Meredith L. (TARL, Texas-Austin)

[20] **Shell Artifacts at the Mitchell Ridge Site, Galveston Island, Texas**

Marine shell beads and ornaments were recovered as necklaces, bracelets, waist bands, and head

bands from mortuary features at the Mitchell Ridge Site, Galveston Island, Texas. The long chronological sequence of burial features, with inclusions of shell artifacts (from Late Archaic to Early Historic) is unique for the Texas coast. Evolution of marine shell use in mortuary ritual over a period of about 1500 years at the site shows a change in bead form and function with socioeconomic implications.

Drennan, Robert D. (Pittsburgh): [86] Discussant

Driscoll, Stephen T. (The University, Glasgow)
[128] **Forging a Nation: Ethnic Accommodation in the Creation of Scotland in the Early Middle Ages**

Few places with an ethnic mix as complex as Scotland's emerged from the middle ages with such a coherent political entity. This paper examines the processes by which North Britain was forged into an early European state. In the Early Middle Ages (400–1100 A.D.) the Scottish region contained five different peoples speaking distinct languages with cultural links to Ireland, northwest continental Europe, Scandinavia, and, of course, southern Britain. By the end of that period, the Scottish kingdom had a sufficiently well-defined national self-consciousness to fend off repeated attempts at conquest by their larger southern neighbor, England.

Driskell, Boyce (Alabama) and *Paul Goldberg* (Texas)

[87] **The Geoarchaeology of Dust Cave**
Located near Florence, Alabama, Dust Cave (1Lu496) was the locus of prehistoric occupation by late Paleoindian times (10,500 B.P.). Use of the cave continued until 5200 B.P. when deposits filled the entrance to an extent which made continued use unattractive. Recent excavations (1989–1994) reveal five superimposed, isolable, and well-preserved archaeological components within the 5 m thick cave deposit. Evidence from the cave and surrounding terrain suggests that Dust Cave was choked with Tennessee River sediments during the late Pleistocene, but was flushed out and available for use by about 10,500 B.P. This evidence implies that the late Pleistocene landscape in this area of the Tennessee River was as much as 8 m higher and considerably different from today.

Driver, Jon (Simon Fraser): [38] Participant

Duerksen, Ken: [57] (see *Bergman, Christopher A.*)

Duff, Andrew I. (Arizona State)

[107] **Excavations at Rattlesnake Point Pueblo on the Upper Little Colorado River**
Recent research in the Upper Little Colorado River region provides new insights into late Pueblo IV (A.D. 1325–1400) settlement organization. Excavations at Rattlesnake Point Pueblo have revealed in-use assemblages sealed by a catastrophic fire. This unique preservation affords the opportunity to examine intrasite activity organization, assemblage composition, depositional dynamics and the extent of regional exchange. Rattlesnake Point also provides a new window from which to examine the nature of regional interaction with communities in the Silver Creek, Zuni, and Hopi areas.
[111] (see *Mahoney, Nancy*)

Dumond, Don E. (Oregon): [100] Discussant

Duncan, Richard B. and *Kristen Beckman* (both, Skelly & Loy)
[14] **A GIS Predictive Model for Prehistoric Archaeological Sites**

Skelly and Loy, Inc. of Monroeville, Pennsylvania, with the support of the Pennsylvania Turnpike Commission is developing a computer generated Geographic Information Systems (GIS) based predictive model for prehistoric archaeological site locations within southwestern Pennsylvania. The model uses easily available coded and digitized or purchased locational data for various natural and cultural factors within the Monongahela Valley. The combination of statistical analysis and GIS synthesis allows for the predictive evaluation of the relative impacts of ground disturbing activities in a flexible, cost effective and detailed manner. This poster presents an illustration of the results and uses of the GIS model.

Dunne, Michael T.: [47] (see *Graber, Robert Bates*)

Dunnell, Robert C., Laura Newell-Morris, Barbara J. Carter, and Diana M. Greenlee (all, Washington)

[72] **Episodes of Arrested Bone Growth and Sr/Ca Ratios**
Strontium/calcium (Sr/Ca) ratios vary with age, diet, and reproduction, but whether they are altered by disease is unknown. We conducted a pilot study to explore the latter association. We located growth arrest lines in femurs from five nonreproductive pig-tailed macaques, on a constant diet and

≈4.5 years at death. All had experienced G.I. disease with weight loss (5–35%). Sr/Ca ratios (x1000) were calculated, based on electron microprobe analysis at 10 points on each side of an arrest line in femoral cross sections. Marked inter- and intra-individual heterogeneity of Sr/Ca ratios (.0 to .32) was present.

[10] (see *Carter, Barbara J.*)

[22] Discussant

Dunning, Nicholas P. (Cincinnati)

[130] **Urban and Rural Settlement Systems of the Puuc Region, Yucatan, Mexico**
Recent research at the ancient Maya centers of Xkipche and Sayil has revealed considerable information on the nature of both urban and rural settlement systems in the Puuc region. In urban areas, distinct residential and nonresidential areas are evident, with residential areas tied to urban gardens. Rural settlement was also agriculturally focused but appears to have been largely seasonal in nature. These findings have important implications for population reconstructions, both in the Puuc region and throughout the Maya Lowlands. Additional evidence on the organization of settlement in the region is provided by a variety of boundary maintenance features.

[13] (see *Scarborough, Vernon L.*)

[52] (see *Rue, David*)

Durand, Stephen R. (Eastern New Mexico): [42] (see *Kunkel, Kristine M.*)

Durst, Jeff (Texas-San Antonio): [13] (see *Lohse, Jon C.*)

Dye, David H. (Memphis)

[18] **Late Mississippian Warfare Iconography in the Central Mississippi Valley**
Warfare was a primary component in Mississippian social dynamics. In this paper I examine applied, engraved, and painted images on ceramic bottles, and to a lesser extent marine shell cups, which point to various facets of Mississippian hostilities. Based on sixteenth and seventeenth century ethnohistoric documentation, warfare in the Central Mississippi Valley and adjacent areas, was a significant element the political and social maneuvering of commoners and elites.

Earle, Timothy (California-Los Angeles)

[81] **Household Archaeology in a Regional Context: The Thy Archaeology Project, Denmark**
The Thy Archaeological Project is an international collaboration of Danish, English, and American archaeologists investigating long-term changes in the landscape and society of Thy, northwestern Denmark. The Project combines various facets: paleoenvironmental reconstruction with pollen cores, fieldwalking survey of settlements, intensive plowsoil excavations, household excavations, macrofossil recovery, analysis of micro-polishes, and related studies of ceramic remains and lithic debris. Taking an eclectic materialist perspective, TAP has developed innovated methods for data recovery and analysis in order to understand the evolution of chiefdom societies during the transition from the Late Neolithic to the Early Bronze Age.

[55] Discussant

Eastman, Michael P. (Northern Arizona): [136] (see *Hunter, Andrea A.*)

Ebert, James I. (Ebert & Associates)

[100] **Modeling Coastal Site Occurrence Within a GIS Framework: The EXXON Valdez Oil Spill Archaeological Damage Assessment**

As part of the EXXON Valdez Oil Spill Archaeological Damage Assessment project, a major multidisciplinary study directed by SUNY-Binghamton for the USDA Forest Service, Ebert & Associates, Inc. (Albuquerque, NM) undertook research focusing on modeling the distribution of unknown but potentially affected coastal sites. Site locational and coastline databases were emerged and analyzed in a geographic information system environment (Arc/INFO). Methods, conclusions and their theoretical implications are discussed.

Eckert, Suzanne L. (Arizona State)

[118] **Social Differentiation at Post-Chacoan Great House Sites: A View From the Hinkson Site, New Mexico**

Archaeologists have recently become aware that during the post-Chacoan era, aggregated communities arose throughout the Cibola region of the Southwest. Due to their recent identification, little is known about these sites. Analysis of ceramic types associated with independent room blocks at the Hinkson site—an aggregated community surrounding a great house—has facilitated the building of a site chronology, including when the great house was built and abandoned. More importantly, analysis of midden material offers a means of examining differentiation between room blocks, helping us to understand intrasite social organization at the Hinkson site during this period.

Ehrhardt, Kathy and Lawrence A. Conrad (Western Illinois)

[45] **New Light on the Protohistoric Illini: Evidence from the Illiniwek Village Site, Clark County, Missouri**

Archaeological efforts to understand tribal affiliations and social transformations of resident groups in the Illinois Country during the Protohistoric/Early Historic Period have concentrated on the Starved Rock, Illinois, locality. However, as the location of Joliet and Marquette's encounter with the Illinois in 1673, the Illiniwek Village site, Clark County, Missouri, lies in a critical position for investigating such questions. Western Illinois University's 1994 investigations at the site define a post-contact Illini material assemblage demonstrate clear linkages between Danner series ceramics and the Illinois, and shed light on native manipulation of French metal trade goods.

Elia, Ricardo J. (Boston)

[29] **Antiquities Collecting: A Destructive Passion**

The international antiquities market is a pure example of the law of supply and demand. Collectors create a demand for archaeological objects and provide, however indirectly, the financing for looting. Most efforts to combat looting have focused on the looters, smugglers and, to a lesser extent, the dealers, with little effect. Collectors, on the other hand, have traditionally been lionized as benefactors of the arts. It is argued that the problem of looting can never be controlled effectively until collecting comes to be regarded by society as an irresponsible and destructive avocation.

Elias, Scott (Colorado)

[68] **The Role of Insects in Zooarchaeology**

Insect fossils are making an important contribution to the reconstruction of both natural and anthropogenic environments associated with archeological sites. Most New World studies cover the last Pleistocene or earliest Holocene, while most Old World studies concern the mid- to late-Holocene. In Europe, a diverse synanthropic insect fauna developed in response to the accumulation of organic debris associated with more-or-less sedentary lifestyles from the Bronze Age onward. In contrast to this, New World faunas from the last Pleistocene and early Holocene reflect only natural environments, as Paleoindian hunter-gatherers left very little organic debris on the landscape.

Elkin, Dolores (Instituto de Antropologica-Argentina)

[90] **Earliest Hunters of the Argentine High Andes**

The results of recent archaeological research related to early hunter-gatherers of the Argentine *puna* (over 3,500 m asl) are presented here. The chronological frame covers the Pleistocene-Holocene transition and the early Holocene. This presentation focuses on the topic of faunal resource exploitation, comparing the new data with the scarce information available so far for this time period and this geographic area. The main taxa present in the archaeological assemblages are camelids, cervids, and rodents, though their relative frequencies vary significantly in different sites. There is no evidence of exploitation of Pleistocene fauna.

Ellick, Carol J. (Statistical Research)

[7] **The Health and Safety of Archaeology or What You Don't Know *Can* Hurt You: Introduction**

Although the danger that archaeologists encounter was grossly exaggerated in the Indiana Jones movies, it does exist. Are archaeologists aware of potential occupational hazards? How many are trained in safety procedures or regulations? Archaeological field and laboratory activities can result in the spread of diseases, exposure to toxic materials, or bodily injury. Some well-established archaeological field practices may be in violation of federal Occupational Safety and Health Administration (OSHA) standards. Procedures can be applied to identify and prevent several health and safety problems in archaeology.

Ellis, Christopher J. (Western Ontario): [87] (see Jackson, Lawrence J.)

Ellis, Christopher J. (Western Ontario) and *D. Brian Deller* (Glencoe, Ontario)

[36] **Early Paleoindian Cultural and Adaptive Variability in the Great Lakes/Northeast: A View from Southern Ontario**

An overview is presented of the fluted point related occupations of southern Ontario. It is suggested that there has been a tendency in Paleoindian studies to homogenize the nature of such occupations at the expense of a concern with variability in the archaeological record. Evidence for cultural and adaptive variability over time in southern Ontario and contrasts with time-equivalent occupations in other areas of the Great Lakes/Northeast is highlighted.

Elson, Mark D. (Center for Desert Archaeology): [62] (see Stark, Miriam)

Emberling, Geoff (Michigan)

[58] **Producing Ethnicity in Third Millennium Mesopotamia**

One of Costin's (1991) four axes of variation in the organization of craft production is its social context, ranging between attached production of elite goods and independent production of utilitarian goods. However, goods differentiating social groups other than elites, such as ethnic groups, might be produced within distinctive production and distribution systems. I propose that goods marking boundaries of ethnic groups will often be produced, in pre-industrial economies, on a small scale with nonmarket distribution. I explore this proposal using Scarlet Ware, a painted ware of third millennium Mesopotamia.

Emerson, Thomas E. (Illinois-Urbana/Champaign) and *Douglas K. Jackson* (Illinois)

[59] **Rural Transformation and the Mississippian Political Trajectory Outside Cahokia**

Mississippian rural residents are often portrayed as a homogeneous, stable population of subsistence farmers, i.e., a slowly evolving, unchanging peasant culture separate from and unaffected by elite machinations within the large temple mound polities. American Bottom investigations have demonstrated that this perspective is erroneous and that dramatic economic, religious, and political transformations mark the rural landscapes. This paper explores possible causes of these transformations.

Endicott, Julie M. (California-Berkeley)

[79] **Polynesian Women: A Closer Look at Some Stereotypes**

Images of Polynesian women as promiscuous, powerless, and degraded were introduced into Western cultures by early explorers and missionaries. Archaeological studies have done nothing to counter these perceptions as they tend to focus on the remains of male activities in the prehistoric island societies. This paper will explore archaeological evidence for women's roles in East Polynesian societies in late prehistory. This will demonstrate the ways in which images of Polynesian women have been manipulated to serve the purposes of others.

Engelstad, Ericka (California-Berkeley): [79] Discussant

Engwall, Eyan C. (Illinois-Urbana/Champaign)

[53] **The Tabuchila Phase: Late Formative Chorrera Culture in the Jama River Region, Manabi, Ecuador**

This paper presents an overview of the Tabuchila phase (ca. 1000-500 B.C.), the Jama River variant of the enigmatic Late Formative Ecuadorian culture called Chorrera. Systematic regional survey has located numerous sites containing Tabuchila phase occupations; stratigraphic excavations were undertaken at two sites in highly contrasting settings within the natural environment and regional settlement system. El Mocorral is a small upland site, while Dos Caminos is a large alluvial site. The artifact assemblages, including the diverse ceramics from these sites are compared to each other, as well as to other Chorrera occupations in Ecuador.

Enloe, James G. (Iowa)

[60] **Readaptation: Changes in Magdalenian Subsistence and Social Organization**

Mellars suggests that Magdalenians pioneered the Paris Basin at the end of the Pleistocene in order to maintain exploitation of reindeer and horse in open environments as the glaciers retreated. Magdalenian occupation of the Paris Basin differs, however, from that of the classic sites in the Périgord. There are no large aggregation sites. Sites are small and highly seasonal, suggesting increased mobility. Elaborate art is much more poorly represented. These suggest decreased social complexity and changes in subsistence. Data from Pincevent and Verberie are used to evaluate differential site function as it relates to situational adaptation in a new environment.

Erdman, Deborah (California-Los Angeles)

[26] **Styles of Time: Decorated Ceramics as Chronological Markers**

The use of ceramic styles in chronological reconstruction is a basic tool in archaeology. In the Basin of Mexico a variety of black-on-orange ceramics are used to distinguish different periods of development and growth in the Postclassic period. This paper contextualizes the decorative styles of black-on-orange ceramics, considering them in their social roles as forms of symbolic communication, to evaluate the power of these styles and social and chronological markers. Ultimately, I argue that both symbolic and functional questions need to be addressed before we can confidently use decorated ceramics as chronological markers.

[55] (see Bech, Louisa)

Erickson, Clark L. (Pennsylvania)

[32] **Experimental Approaches to Ancient Agricultural Technology in Amazonia**

Large-scale agricultural earthworks attributed to prehispanic farming communities were discovered

in the early 1960s in the tropical lowlands of Bolivia. The fields have been long abandoned and the best means of recovering information on this technology is through archaeology and agricultural experimentation. Recent investigation has used survey, mapping, and excavation of prehispanic raised fields to develop models for the construction of experimental plots. Between 1990 and 1994, fields were constructed in various locations including two indigenous communities. The implications of the experimental results for the understanding the regional prehistory and contemporary rural development in Amazonia are presented.

Escobedo, Hector (Vanderbilt): [52] (see *Demarest, Arthur*)

Espenshade, Christopher T. (Brockington & Associates)

[115] **An Early Ostinoid Vessel Assemblage from Site PO21, Cerrillos River Valley, Puerto Rico**

The pottery from an Early Ostinoid site, PO21, in the Cerrillos Valley of Puerto Rico was examined to define the vessel assemblage. The materials were derived from midden deposits and a flood-sealed living floor. Nine size/form classes were defined in addition to manioc griddles. Functional interpretations are offered, based on morphology, size, and use indicators. The analysis indicates that a wide range of vessel forms and sizes were utilized during the short occupation span of the site. The ceramic data complemented other data sets in suggesting that the site served as a hamlet or small village.

Euler, Robert C.

[35] **Anasazi Culture Change and Paleoenvironment in Southeast Utah**

Ongoing research centering on John's Canyon, a tributary of the San Juan, tentatively supports the hypotheses of George Gumerman and his colleagues in *The Anasazi in a Changing Environment*. Preliminary studies indicate a small Basketmaker II population at about 5,000 feet. Pueblo I sites are found mostly at elevations above 7,000 feet. The former tends to correlate with a relatively high effective moisture regime and the latter with lower effective moisture. Later, large sites, some with great kivas, were built along more permanent drainages and at lower elevations when water tables were higher.

Evans, J. Bryant (Illinois-Urbana/Champaign)

[59] **An Analysis of and Explanation for Cultural Discontinuity in the American Bottom During the Late Archaic-Early Woodland Transition**

The cultural transition from the Archaic to the Woodland period in mid-America is generally characterized by several significant cultural evolutionary patterns. These patterns include increased sedimentism of cultural groups, more specialized food procurement strategies including a greater reliance on cultigens, and the development of more complex sociopolitical organization. In this paper, the concept of a gradual transition is questioned. Archaeological evidence indicates that a major cultural discontinuity occurred between the Late Archaic and Early Woodland periods. A multidimensional model based on sociopolitical, environmental and economic factors, for what is seemingly a case of "devolution," is proposed.

Evans, Susan Toby (Pennsylvania State): [15] Discussant

Evans, Susan Toby (Pennsylvania State), *Jeffrey R. Parsons* (Michigan), and *Thomas H. Charlton* (Iowa)

[26] **Aztec Period Ceramics of the Rural Teotihuacan Valley**

Ceramics from Postclassic period rural sites in the Teotihuacan Valley (Mexico) include decorated wares such as black-on-orange, which serve as diagnostics for chronological phasing and to delineate spheres of cultural interaction. This paper presents the results of an analysis of the surface collections from Postclassic sites mapped by the Teotihuacan Valley Project, and describes subregional settlement systems as they can be defined by ceramic assemblages. Decorated ceramics are also used to address cultural-historical issues, such as the timing and nature of the settlement process in the Valley's rural areas.

Fabech, Charlotte (University of Aarhus)

[128] **Political and Religious Centers during the Early Middle Ages in Denmark and Sweden**

The settlement pattern in Denmark and Sweden in the Early Middle Ages can be perceived as a network of centers based on various resources and economies, in constant competition and conflict with each other. To find such centers we have to look for the symbols of power and religion, and to understand why some settlements were more important than others and perhaps became the seats of rulers and/or sacral sites it is necessary to understand their place in the cultural landscape.

Falconer, Steven (Arizona State): [58] (see *Magness-Gardiner, Bonnie*)

Falk, Carl, Russell W. Graham (Illinois State Museum), and *Holmes A. Semken, Jr.* (Iowa)

[110] **Correspondence Analyses of Mammalian Remains from Missouri Basin Archaeological Sites in North and South Dakota**

Vertebrate remains of more than 70 mammalian taxa from 60 archaeological sites are analyzed. Materials from single and multiple occupation sites included used dissimilar sampling and recovery strategies. Faunules within the Middle Missouri subarea show little variation with respect to the occurrence of major carnivores and key "subsistence" species. In contrast, the nature and composition of micromammal samples is varied, reflecting differences in field collection techniques and in local microenvironments at the time of occupation. The analysis accents the need for systematic collection of micromammals in support of paleoenvironmental studies.

Farmer, James D. (Virginia Commonwealth)

[118] **A Contextual Approach to Basketmaker Art: Warfare and Sacrifice in Early Anasazi Culture**

This paper presents revised iconographic interpretations of Anasazi Basketmaker art in light of recent archaeological focus on the significance of warfare and human sacrifice in early Anasazi culture. Comparisons of rock art and burial images with archaeological data and contemporary Mesoamerican cultures provide new perspectives on early Anasazi culture. It is argued that burial objects and rock art imagery from sites such as Green Mask, Utah and Painted Cave, Arizona depict decapitated or dismembered sacrificial victims or casualties of war.

Farquhar, R.M. (Toronto): [98] (see *Hancock, R. G. V.*)

Fash, Barbara (Northern Illinois): [34] (see *Stomper, Jeffrey*)

Faught, Michael K. (Arizona)

[87] **Early Floridian Archaeological Sites: Karst Geology, Stratigraphy, and Models for Site Discovery Offshore**

Florida represents an area of dense Paleoindian occupation based on the recorded numbers of projectile points known from various counties. This paper reviews the geomorphological and stratigraphic settings for these discoveries including several Paleoindian and Early Archaic archaeological sites. The radiocarbon record is also reviewed. The demography of early Floridian colonization is obscured in part by sea level rise over a large continental shelf area and this paper also reviews how some of these geomorphological settings have been used as analogs to discover inundated archaeological sites in the Apalachee Bay of NW Florida.

Fawcett, Bill (Utah State)

[113] **Bringing Theory to Method Within the Context of Academic Research Funded by Cultural Resource Management**

Archaeology is the most expensive of the social sciences, and most of the funding for this endeavor in the Americas comes from contracts for cultural resource management (CRM). Many of the theories and methods guiding and used in CRM studies have arisen in academic settings, but increasingly maintaining an active research program is dependent on CRM funds. I discuss the ways that the contemporary structure of CRM rewards broad unfocused ("shot-gun") projects, using lots of fancy high-tech methods, to reinforce existing culture histories coated with only a superficial gloss of theory. Such projects create vast quantities of unpublished reports and poorly analyzed collections, yet they represent the bulk of the archaeology being done (based on funding the employment). Some possible solutions are offered.

Feathers, James (Washington)

[136] **Application of Luminescence Dating in American Archaeology**

The application of luminescence dating in American archaeology is reviewed. Recent developments in the method of both thermoluminescence and optically stimulated luminescence, for both ceramics and sediments, are discussed with particular emphasis on the strengths of the method when compared to other absolute dating methods. All points are illustrated with recent results from the laboratory at the University of Washington.

Féblot-Augustins, Jehanne (CNRS-Meudon)

[57] **Raw Material Transport and Group Mobility in Western and Central Europe: Diachronic Change and Synchronic Variability in the Middle and Upper Paleolithic**

Raw material analysis points to significant differences in procurement patterns and group mobility across the late Middle-Upper Paleolithic divide in western and central Europe. Socioeconomic organization and suitability of local raw material for Upper Paleolithic blade production offer explanations. Given the techno-economic consistency within each period, synchronic variability in

distance and spatial configuration of moves is explained in terms of adaptations to varied environments.

Feiler, Eric (Northern Arizona)

[120] **Temporal Changes in Lithic Technology Based on Evidence from 32DU965A, Knife River Flint Primary Source Area, North Dakota**

Prehistoric flintknappers exploited flint-rich deposits at 32DU965A from at least the Early Archaic through the Late Prehistoric time periods. Stratigraphic data as well as patination data suggest that flintknappers from earlier time periods concentrated on reducing tabular pieces of Knife River Flint into bifaces. Two moderately patinated blade cores suggest some minor blade production also during earlier time periods. Numerous blade cores as well as other technologically distinctive cores from Late Plains Archaic levels indicate blade and morphologically distinctive flake production were important activities during this time period. Bipolar core reduction is limited to the Late Prehistoric period.

Feinman, Gary M. (Wisconsin-Madison)

[86] **The Ancient Ejutla Site and Multi-Craft Production: Implications for Models of Economic Specialization**

The Ejutla research documents that select Classic period households practiced several crafts, producing a range of goods (utilitarian and status-related) for diverse spheres of consumption. The domestic context of this craft production is discussed as are the variety of ceramic, shell, and lapidary products that were made. These empirical findings have implications for the Mesoamerican ethnographic model of single-craft villages as well as for more general conceptions of independent/attached specialists and full/part-time craft production.

Feinman, Gary M. and Linda M. Nicholas (both, Wisconsin-Madison)

[20] **Shell Ornament Technologies and Production in Highland Oaxaca**

Household-scale manufacture of marine shell ornaments was carried out at the highland Ejutla site (Oaxaca, Mexico) during the Classic period. Excavations in both midden and domestic contexts indicate that a wide range of technologies was employed on a diversity of shell raw materials to produce a variety of ornaments (including beads, pendants, and placas). Preliminary studies of marine shell assemblages from elsewhere in highland Oaxaca indicates that while some of these shell-working technologies and ornamental products have a long history in the region, others may date to later in the Classic period.

Fekete, Eva (York)

[88] **Bones in the Closet: A Look at the Relationship Between Skeletal Remains and Gender in Maya Prehistory**

The results of analysis and comparison of ancient Maya burials of men, women and children from the sites of Altun Ha and Lamanai in Belize, Central America are summarized. Burial position, associated artifacts, disease and/or skeletal trauma are examined in terms of what they can tell us about the position and status of women in these Maya communities. In addition, the implications for method and theory of gender relations will be explored.

Feldman, Robert (Field Museum of Natural History): [99] Discussant

Ferguson, Josalyn

[37] **The Little People: A Discussion of Dwarfs Among the Pre-Columbian Maya.**

The images of dwarfs appear on various mediums in Maya art, from ceramic vessels to carved stelae. While the presence of dwarfs has been recognized by scholars and ancient art connoisseurs alike, little is known about them or their role(s) within pre-Columbian Maya society. While articles focusing on dwarfs have been written, the current status of the database on dwarfs among the Maya is lacking. The intention of this paper is to bring together the archaeological evidence with some of the theories on Maya dwarfs, while presenting some of my own ideas on their role(s) within society.

Ferguson, T. J. (Institute of the North American West): [85] (see *Mills, Barbara J.*)

Ferring, Reid (North Texas)

[9] **Subsistence and Mobility Patterns at the Aubrey Clovis Site, Texas**

Abundant faunal remains from both natural and cultural contexts indicate procurement and processing of a wide variety of resources, ranging from bison and deer to small game, turtles and fish. A possible mammoth butchering locus is currently being investigated. Spatial patterning of faunal remains, artifacts and hearths within the 250 m long site indicate widely spaced procurement/processing and camp loci associated with a spring, a pond and the Trinity River paleochannel. Artifact assemblages indicate long-distance raw material procurement, final stages of

tool manufacture and intense tool curation. Overall, a pattern of high mobility and unspecialized foraging activities in a dry prairie environment is indicated.

Field, John (Western Washington)

[95] **Late Quaternary Climatic Change in Wadi Ziqlab, Jordan**

Alluvial and colluvial deposits exposed near Tabaqat al-Būma, a site in Wadi Ziqlab, provides paleoclimatic evidence for an upland region of northern Jordan. Colluvial deposition during the Kebaran (ca. 14,000 B.P.) and again in the Late Neolithic (ca. 6500 B.P.) probably occurred during moister periods of less intense rainfall, when sediment derived from the adjacent hillslopes was not transported downstream. Erosion and alluviation some time between the Kebaran and Neolithic occupations are interpreted as indicating more arid conditions and more intense rainfall, with flash floods capable of transporting sediments to the Jordan Valley.

Filios, Elena (Central Connecticut State)

[113] **Critical Archaeology and the Deep Past: A View from the Bottom of the Pit**

Critical archaeology's illumination of social relations in the past founders on its ability to bridge the gap between theory and data. Nowhere is the lack of consensus about appropriate, adequate and sensitive methods more clear than in analysis of the deep past. A social model of hunter-gatherer use of space in the third millennium B.P. in southern New England provides an opportunity to examine some strengths and weaknesses of a critical approach. Just as we cannot discuss method in the absence of theory, neither can we move the process of theory-building forward in the absence of method.

Fingerhut, Terry A. (Minnesota)

[27] **New Approaches to Honestones from Viking Age Sites**

This paper will present my research to date concerning investigations made into the honestone remains which have been found on sites within Viking Age Scandinavian colonies of the North Atlantic. It will not be focusing on the petrological properties of the artifacts, but examining them more in their social and economic contexts, and possibly even exploring their ritual functions. The types of sites from which I have taken honestone examples are varied and intended to provide a broad base for discussion of the numerous types of settlements which existed in the North Atlantic Scandinavian colonies of the Viking Age and their economic connections to the Scandinavian homelands.

Fink, T. Michael (Arizona Department of Health Services)

[7] **Infectious, Venomous, and Chronic Diseases and the Risks to Archaeologists**

Current archaeology has substantially increased field opportunities for archaeologists in the United States. While often viewed as an economic "boom" for the profession, increased fieldwork also means field crews are at additional risk to a variety of illnesses. These include hantaviral disease, plague, malaria, melanoma, carpal-tunnel syndrome, and other conditions that are the focus of new or renewed research due to their recent emergence or resurgence in the United States. Because many of these conditions can be debilitating or even fatal, archaeologists need to become better acquainted with potential disease risks associated with their profession.

Finney, Fred A. (Iowa): [45] (see *Lensink, Stephen C.*)

Fischer, Anders (Forest and Nature Agency, Denmark)

[117] **The Introduction of Agriculture in Scandinavia—The Importance of Long Distance Exchange Systems**

In southern Scandinavia the basic material culture demonstrate a cultural continuum through the period ca. 4100 to 3650 B.C. (cal.) when agriculture was introduced. This is exemplified through a sequences of settlement assemblages from Amosen, Denmark. Cereals, cattle and agricultural know how may have been obtained through the exchange systems in prestige items being active prior to and during the innovation period. An example of this are the Danubian shaft hole axes which were traded over most of Europe. The domesticates may also have been introduced for non-economic reasons—e.g., cereals for brewing of beer to be served at special social/religious events.

Fish, Paul Robert and Suzanne K. Fish (both, Arizona)

[35] **Climate, Culture, and Agricultural Intensification in the Southwest**

For the prehistoric cultivators of the Southwest, the relationship between climate and culture was mediated through the exigencies of agricultural production. In the archaeological literature, this relationship is modeled primarily as the affects of climatic variability on annual productive success or the ability to implement particular agricultural techniques. Culture and social dimensions of the relationship have been less fully explored. We wish to examine the role of social organization and population size on agricultural expansion, elaboration, and intensification, including instances of

irrigation, productive specialization, and diversification that incorporated techniques too individually risky for households or small groups of farmers.

Fish, Suzanne K. (Arizona)

[93] **The Social and Economic Correlates of Hohokam Agave Cultivation**

Agave has recently been recognized as a major crop among the Hohokam of southern Arizona. Although it seems to have been a dietary staple in many cases, agave was always cultivated in addition to the standard Southwestern triad of crops, corn, beans, and squash. A unique role in Hohokam farming systems is the outcome of drought resistant properties, a semiperennial status, and the ability to simultaneously provide food and fiber. The rich archaeological record of agave production and use also provides insights into the social and economic context of this versatile plant.

[35] (see *Fish, Paul Robert*)

Fishel, Richard (Office of the State Archaeologist of Iowa)

[120] **Salvage Excavations at the Dixon Oneota Village (13WD8), Woodbury County, Iowa**
Salvage excavations were conducted in 1994 by the Office of the State Archaeologist of Iowa at the Dixon site (13WD8) in northwestern Iowa. 13WD8 is a 90-acre Oneota village that dates to A.D. 1300. The Little Sioux River had eroded a 180-m-long cutbank through the village, exposing 40–50 storage pits and several house basins. The landowner of the site estimated that over 1,500 m² of the village were destroyed by the 1993 floods. In 1994, the OSA conducted salvage excavations along that segment of the Little Sioux impacting the village area. Portions of 40 pits and three houses were excavated during these investigations.

[45] (see *Lensink, Stephen C.*)

Fisher, Christopher T. (Wisconsin-Madison)

[21] **Raised Fields and State Formation in the Lake Pátzcuaro Basin**

The Epiclassic/Postclassic transition in central Michoacán was a period of rapid political change resulting in the formation of first multiple independent polities, culminating with the Late Postclassic Tarascan state. Through recent archaeological investigations in the Lake Pátzcuaro Basin, Michoacán, Mexico, large tracts of relic raised fields have been discovered. Using a variety of paleo-climatic data, these features can be preliminary assigned to a period of climatic deterioration between A.D. 700–1100, squarely within this critical transition. This paper will explore the role these intensification features may have played in the dynamic environmental, social, economic, and political landscape that characterized the Lake Pátzcuaro Basin prior to state formation.

Fisher, Daniel C. (Michigan)

[36] **Commonalities of Mastodon Carcass Processing in the Eastern Great Lakes Region, USA**

Numerous mastodon sites in the Great Lakes region share taphonomic features suggesting a common mode of site formation. Certain features, including style of disarticulation and stereotyped patterns of modification at muscle/tendon attachment sites, indicate carcass processing by humans. Season of death, occurrence in late Pleistocene ponds/bogs, and association with sections of intestine apparently used as anchors and/or markers, suggest these sites represent overwinter, subaqueous meat caches, recording one aspect of a subsistence strategy implemented over a broad region. Other species (e.g., mammoth, moose) show similar patterns and invite comparisons on a continent-wide scale and beyond.

[105] **Season of Death of the Dent Mammoths**

Tusks and cheek teeth of the Dent mammoths show fine-scale dentinal banding that represents fortnightly growth increments, as have been described in other proboscideans. Growth increments may be counted and measured microdensitometrically and yield a record of growth showing annual (seasonal) fluctuations in rate, interpreted as reflecting nutritional status. Seasonal fluctuations in rate of dentin apposition appear relatively low, but provisionally indicate an autumn season of death, supporting the view that these individuals were hunted.

Fisher, Genevieve (Pennsylvania)

[128] **Wealththeow's Gift: Women, Weaving, and Power in Early Anglo-Saxon England**

In England during the early Anglo-Saxon period (ca. A.D. 450–750), localized polities in which power was mediated through personalized, kin-based relationships were replaced by hegemonic kingdoms. An analysis of mortuary evidence indicates the increasing representation of a stereotyped female activity, textile production, during this period of political consolidation. In addition to the successful domestic economy which these products insured, textiles circulated beyond the household as ritual gifts, ultimately serving as an idiom of social and political organization.

Fisher, John W. (Montana State): [116] (see *Davis, Leslie B.*)

Fitzhugh, Ben (Michigan)

[100] **Life's a Beach: Evolution of Settlement and Land-Use in the SE Kodiak Archipelago**
This paper presents the results of two seasons of archaeological survey around Sitkalidak Island and SE Kodiak Island in the central Gulf of Alaska. Results to be presented include evidence for the earliest known occupation on Kodiak, an evolutionary sequence of settlement patterns over eight thousand years, preliminary data on population change, evidence for the beginning of organized warfare and defense, and preliminary data on the evolution of social inequality. Conclusions will be offered on the nature of political evolution and social and economic changes for the study region and the Kodiak Archipelago more generally.

Fitzhugh, William (Smithsonian)

[44] **Public Education in the Museum Curator's Career**

Considers the integration of public education work with the range of activity typically required of the museum curator. Special attention is given the role of the exhibit and popular publication work in the curator's career.

Fletcher, Thomas F. (SUNY-Buffalo)

[67] **Right-of-Way Archaeology and Research Opportunity**

Right-of-way archaeology projects are frequently limited to locations as dictated by contracts and not selected specifically to address research concerns. Consequently, addressing research issues has been termed an "opportunistic" endeavor. This paper examines the research opportunity presented by the data recovery excavations at the Sanders Great House and six other sites along US Highway 191 in east-central Arizona. The results of the work are considered in light of the right-of-way limitations placed on the project. Alternative approaches, including methods of data collections outside the right-of-way, are explored to examine their potential effectiveness and compared with results of the approach taken.

Ford, Anabel (California-Santa Barbara), *D. Clark Wernecke* (Florida Atlantic), and *Miguel Orrego C.* (IDAEH, Guatemala)

[73] **Creating the El Pilar Archaeological Reserve for Maya Flora and Fauna: A Collaborative Interdisciplinary, Multifaceted, and International Program**

The regional Maya center of El Pilar will be the focus of major intensive archaeological attention. In order to bring El Pilar to archaeological prominence, a management-protection plan was launched and in the process the *El Pilar Archaeological Reserve for Maya Flora and Fauna* was created. In collaboration with the Government of Belize and combining enlightened talents of a variety of professionals, the reserve plans provide immediate short-term benefits for the local community and at the same time developing long-term sustainable solutions for the region. This poster will illustrate the diverse dimensions of the evolving program with maps, sections, and photographs.

Forenbaher, Stašo (Southern Methodist): [76] (see *Kaiser, Timothy*)

Forman, Steven (Ohio State): [70] (see *Waters, Michael R.*)

Forsman, Leonard A. (Larson Anthropological/Archaeological Services): [43] (see *Solimano, Paul*)

Fortier, Andrew (Illinois-Urbana/Champaign)

[59] **Renaissance and Disequilibrium: Middle Woodland Discontinuities in the American Bottom**

Previous evolutionary models in the American Bottom have emphasized a Middle Woodland continuum dating from 150 B.C. to A.D. 300. Hopewell culture in this model represented a form of punctuated equilibrium that developed in the middle portion of the sequence, but was part of a home-grown progressive evolutionary development. Hopewell in this paper, however, is regarded as an anomalous discontinuity that, despite its technological achievements, did not contribute much to further cultural complexity in this area. The eventual collapse of this cultural system initiated a period of readaptation and the formation of a new cultural trajectory.

Foster, Lynn: [114] (see *Wren, Linnea H.*)

Fotiadis, Michael (Indiana): [113] Discussant

Fournier G., Patricia (Escuela Nacional de Antropología e Historia, Mexico): [125] (see *Charlton, Thomas H.*)

Fowler, Don (Nevada-Reno): [48] Discussant

Fowler, William R. and Inez Verhagen (both, Vanderbilt)

[125] **The Center at the Periphery: The Archaeology of Colonialism in Los Izalcos, El Salvador**
The Izalcos region of western El Salvador, the principal cacao-producing area of early colonial Guatemala, experienced the impact of imperialism to a degree seldom seen in other peripheries of the Spanish empire. The cacao industry attracted Spanish gentry, merchants, and priests who, with their African slaves, interacted culturally and biologically with native Pipil producers. Their complex interrelations are known through massive historical documentation which shows the misery and oppression of the Pipils. Recent archaeological research reveals a different perspective on native responses to imperial domination, however, and indicates active participation by the Izalcos Pipils in the sixteenth-century European world system.

Fox, John Gerard (Peabody Museum)

[50] **Feasts, Ballgames, and Ritual Process in the Americas**

The Mesoamerican ballgame is often viewed as a unique and isolated form of ritual action detached from any meaningful social context. Employing evidence recovered from ballcourt excavations and iconography, I argue that the mesoamerican ballgame was but one component of a larger ritual cycle which included the production and consumption of food in community feasts. Expanding beyond Mesoamerica into North and South America, I explore the symbolic link between ballgames and feasts in a number of contemporary and historic cultural contexts. These rituals serve to shape community identity while establishing and reinforcing claims of social difference.

Francis, Julie (Wyoming Transportation Department) and *Mary Lou Larson* (Wyoming)

[39] **Petroglyphs, Points, and Pots: The Numic Expansion and Prehistoric Boundary Conditions in Northwestern Wyoming**

The Numic expansion hypothesis has been used to explain the appearance of certain types of archaeological remains across the Great Basin and into the northwestern Plains during the Late Prehistoric period. This hypothesis will be examined through an analysis of spatial and temporal distributions of materials thought to best reflect participation in different sociocultural and ideological systems and the areas exploited by prehistoric populations. Through analysis of rock art and chipped stone raw materials, we investigate prehistoric boundary conditions and their implications for ethnicity and cultural dynamics during the Late Prehistoric Period.

Franco, Nora Viviana (Programa de Estudios Prehistóricos-CONICET): [116] (see *Borrero, Luis Alberto*)

Franco, Nora Viviana and *Luis Alberto Borrero* (both, Programa de Estudios Prehistóricos-CONICET)

[22] **Bifaces, Guanacos, and Other Resources: The Evolution of Patagonian Populations**

A discussion of archaeological expectations for human populations from different regions of southern Patagonia was derived from evolutionary ecology. A distributional approach was used in order to collect the required lithic and faunal samples. In addition, excavations in selected places contributed temporal samples spanning the last 4,000 radiocarbon years. The analysis permitted the assessment of the importance of changes in the design and frequencies of artifacts in the evolution of patagonian populations. The results from the Lago Argentino study are presented, as well as a general comparison with Ultima Esperanza.

Franke, Judith A. (Illinois State Museum)

[58] **Pottery Craft Specialization at Old Babylonian Nippur, Iraq: Evidence for Standardization of Type, Ware, and Capacity**

A large, well-documented assemblage of pottery from a 60-year occupation of a residential area provides a body of data that reflects a corpus of standard in-use types, standard proportions of types in use, a dichotomy of wares in relation to function, and vessel capacities that fit well within a sexagesimal system of measurements, suggesting that the Mesopotamian potter produced vessels in conformity with the standard measurement system. Some variations in details of morphology, however, may reflect the personal style of individual potters.

Franklin, Maria (California-Berkeley)

[79] **Power to the People: African American Archaeology and Another Case of Us Against Them**

Should only blacks dig African American sites? What obligation does an archaeologist have to involve the descendants of enslaved Africans in his research? The issues are familiar ones, springing from the study of historically oppressed groups by the white male elite. Now many historical archaeologists may find themselves being held accountable to black communities, as the New York African burial ground excavation has demonstrated. This paper surveys the arguments made by blacks and by archaeologists regarding professional responsibility and the legitimacy of claims to the

remains of African American sites.

Fredlund, Glen (Wisconsin-Milwaukee)

[131] **Bison Teeth, Phytoliths, and Climate Change in the Great Plains**

Analysis of grass phytolith assemblages from archaeological bison teeth provides a means for testing hypotheses relating to climate change, bison ecology, and human adaptation on Great Plains. Modern phytolith data are used to test several of the assumptions which underlie this phytolith application and to evaluate archaeological phytolith assemblages from several Paleoindian sites. The relationships among bison tooth phytolith assemblages, bison diet, and grassland composition are defined using modern teeth, composite scat samples, and modern soil samples from four modern free-ranging bison herds.

Freeman, Andrea K. L. (Arizona)

[87] **We're Not in Kansas Anymore: The Search for a Yellow Brick Road of Human Entry Into and Settlement of Eastern North America**

At the same time that Clovis people entered eastern North America, the ice-age was experiencing its last gasp of regional cooling and ice-margin fluctuations. Geomorphic changes during this period both impeded and facilitated human movement throughout eastern North America. The geographic and sedimentary traces of these geomorphic changes provide spatial and temporal boundaries for human occupation of the region, and provides clues to human settlement and use of this unoccupied landscape. This paper describes the geomorphic changes which took place during the late Pleistocene and early Holocene, their preserved effects, and their relationship to human settlement of the region.

Freidel, David A. (Southern Methodist): [94] Discussant

Freidel, David A. (Southern Methodist), *Charles Suhler* (Southern Methodist), and *Traci Ardren* (Yale)

[114] **Yaxuna: An Early Royal Capital in the North**

Yaxuna is a large site south of Chichen Itza. Research over the last three seasons confirms the status of Yaxuna as a seat of a royal government during the Early Classic period. The insignia and architectural facilities employed by kings at Yaxuna are the same as those used by contemporary rulers in the southern Maya lowlands. Salient features documenting kingship at Yaxuna include the contents of two royal tombs and related architectural monuments. We review the implications of these discoveries for models of the origins and development of Maya government institutions.

Freter, AnnCorinne (Ohio)

[61] **Reconstructing Complex Site Stratigraphy: The Harris Matrix and Obsidian Hydration Dating**

Reconstructing site chronology is a complex process which involves the analysis of multiple lines of data. Obsidian hydration dating, when employed as either a relative or chronometric technique, has great potential as a chronological tool particularly when combined with other data sources. This paper employs the use of the Harris matrix to map complex stratigraphic deposits in combination with obsidian hydration, radiocarbon, and archaeomagnetic dates, from excavations at Copan, Honduras, to demonstrate how obsidian hydration can constructively contribute to the reconstruction of complex site chronology.

Friedman, Janet (Dames and Moore)

[108] **Are We Killing the Goose?**

For much of its history, archaeology was solely an academic pursuit; research money was limited. That began changing in 1966 with passage of the National Historic Preservation Act. Now, nearly 30 years later, archaeology is a required component of government permitting. Record numbers of archaeologists have jobs in government. Tax dollars are spent on compliance archaeology. It seems we have found the wealth patron to support our quest for knowledge. But, with the current mood toward reducing government mandates and cutting spending, is archaeology worth the money? This paper proposes ways to avoid killing geese in our quest for those golden eggs.

[74] Participant

Frison, George C. (Wyoming): [9] Discussant; [70] (see *Brooks, Marjorie*); [105] (see *Kornfeld, Marcel*); [116] Discussant

Fritz, Gayle J. (Washington-St. Louis)

[93] **Native Farming Systems from Lake Itasca to Lake Pontchartrain**

The Mississippi Valley is divided into Upper, Central, and Lower archaeological regions, with separate agricultural histories. The Central Valley was within the North American center of plant domestication, where native seed cropping flourished by 2500 B.P. Maize was present by 2000 B.P.,

but not intensified until eight centuries later. Few indigenous people in the Upper and Lower Valley reaches grew pre-maize seed crops. Maize-based systems that developed in these two regions after 1100 B.P. were very different culturally and ecologically. I discuss the variation in ancient farming life along the Mississippi.
[71] *Discussant*

Fryman, Frank (Bureau of Indian Affairs)

[106] **Some Specific Effects of United States Indian Policy on the Management of Archeological Resources and on The Conduct of Archeology on Indian Trust Lands**

This presentation is a sequel to one entitled, "What Archaeologists Who Wish to Practice on Indian Lands need to Know About the Trust Relationship Between Indian Tribes and the United States." How the principles guiding the relationship affect such things as ownership and protection of archaeological resources on Indian lands, permits for archaeological work on Indian lands, consultation with Indian tribes, the relationship between the Bureau of Indian Affairs and other Federal agencies with regard to Indian lands, and contracting by and with Indian tribes are considered. An extensive opportunity to ask questions will follow.

Fullola, Josep María: [131] (*see Albert, Rosa Maria*)

Funk, Caroline L. (Wisconsin-Madison): [100] (*see Maschner, Herbert D. G.*)

Futato, Eugene M. (Alabama)

[115] **The Lithic Assemblage from Site PO27, Ponce, Puerto Rico**

The lithic assemblage from site PO27 is small but remarkably varied. The available lithic raw materials consist primarily of igneous and metavolcanic rocks with poor fracture properties. Tuffs, basalt, and granite were used in the production of simple, expedient cobble and flake tools. Small petaloid celts were made from fine grained tuff and basalt. A coarse granitic gabbro was used in the production of beads in a variety of shapes. Silicious stone is extremely rare in the assemblage as occurs primarily as small bladelets and cores. Other artifacts include engraved pebbles and small notched pebble weights.

Gabriel, Michael (California-Los Angeles)

[55] **Pyrotechnology Analysis: A Study of Fire and Complexity**

The study of chiefdoms commonly focuses on the identification of prestige goods and production specialists. Bronze was a high profile prestige good during the Early Bronze Age in Denmark, and was likely a symbol of power for the rising elite. Bronze production demanded a pyrotechnology that could provide more heat and control than any employed previously. I will look at how the new pyrotechnology affected established uses of fire. I suggest a method for analyzing pyrotechnology which can be used to investigate specialist workshops controlled by an elite class.

Gaertner, Linda M. (Wisconsin-Madison)

[86] **Chert Tool Production at the Ejutla Site, Oaxaca, Mexico**

The lithic assemblage recovered from the Classic period Ejutla (Oaxaca, Mexico) excavations includes nearly 11,000 chert artifacts. The majority of the chert artifacts consists of tiny flakes from the bipolar reduction of high-quality cherts, or agates. The reduction activities were geared toward the manufacture of standardized drills and other tools, probably done specifically to manipulate imported shell in the most efficient manner possible. The Ejutla chert artifacts used in shell working are compared to those from Formative period households at San Jose Mogote.

Galle, Jillian E.

[126] **Haute Couture: Cotton, Class, and Culture Change in the Protohistoric Southwest.**

From A.D. 1450-1700 production and exchange of cotton textiles was a central aspect of Pueblo society. Using Schneider's textile theory (1987), this paper demonstrates that cotton textiles had ceremonial, sociopolitical, and economic properties which made them essential to the development of leadership in the protohistoric Southwest. Elite clans use of prime agricultural land and control of powerful ceremonial positions and trade relationships were directly tied to cotton production. Cotton was the all-important representation of the deities; control of cotton legitimized a clan's prestige and power. Spanish contact and the introduction of wool created a universal crisis which leveled developing Pueblo hierarchies.

Gao, Qiang: [77] (*see Lee, Yun-Kuen*)

Garber, Jim and *F. Kent Reilly* (both, Southwest Texas State)

[64] **A Late Preclassic Mask on Structure B1 at Blackman Eddy, Belize**

The function of Maya ceremonial precincts was to replicate cosmic order and provide a sanctified

location for rituals that reenacted creation or provided the staging for shamanic trance. The earliest of these structures were multitiered platforms topped by temples and were embellished with facades serving to fuse cosmology and myth into a supernatural display of power. At Blackman Eddy, Belize, a facade program was in place by the Late Preclassic. One mask displays ichnographic attributes linking it to the headband masks worn by a figure on the La Mojarrá stela and to Middle Formative objects in the Olmec style.

García-Argüelles, Pilar: [131] (*see Albert, Rosa Maria*)

García Soto, Ruben (Paracas Site Museum, Peru)

[53] **Paracas Settlement Pattern Archaeology and Cultural Process in South Coastal Peru**

New archaeological survey has been conducted at the Paracas Peninsula and along Paracas and Independence Bays where some of the most important sites of the Peruvian south coast are located: the early pottery site of Disco Verde, the north coast-connected site of Puerto Nuevo, the Chavin textile-bearing site of Karwas, and the great Paracas cemeteries. My settlement pattern fieldwork and pottery analysis put these desert sites into a dynamic, processual, regional cultural perspective. I also suggest a new relative chronology for this particular region, rather than automatically applying the Ica-Nazca chronological scheme to it as others have done.

Gardner, Karen M. (Prewitt and Associates), *Brian S. Shaffer* (North Texas), and *John E. Dockall* (Texas A & M)

[30] **Prehistoric Hunting Technology and Techniques of the Mimbres**

Prehistoric hunting technology and techniques of the Mimbres people of southwestern North America have been inferred from two indirect sources including faunal remains and nonperishable tools. The Mimbres people also documented many of these activities on their Classic Mimbres pottery (A.D. 1000-1150). Comparison of the indirect sources with the pottery motifs indicates that both data sets are incomplete, complimentary, and provide very different aspects of hunting. The combined information of these databases portrays a diverse regime for game procurement that compares well with hunting patterns described in the ethnographies of historic Puebloan groups.

Gardner, Thomas Gardner (Pennsylvania State): [66] (*see Hirth, Kenneth*)

Garrison, Ervan G. (Georgia)

[18] **Archaeological Geophysics and Temple Mounds**

Archaeological geophysical techniques, soil-interface radar and magnetic susceptibility, have been used to investigate temple mound architecture at Etowah, Scull Shoals, and Dublin temple mound groups in northwestern and north-central Georgia. Combined with cryogenic coring techniques, CO₂ and N₂, a synthetic, low-disturbance protocol has been developed for the characterization of the internal structure of these late prehistoric constructions. Preliminary results of work done in 1992-1994 is presented with conclusions and discussion of directions for further research.

Garrow, Patrick H. (Garrow & Associates)

[115] **La Iglesia de Maragüez, A Local Ceremonial Center in the Cerrillos River Valley, Ponce, Puerto Rico**

Archaeological excavations at La Iglesia de Maragüez (PO39) revealed a site that dated to the eleventh century A.D. It consisted of a bately with petroglyphs, a buried midden deposit on a slope below the bately, and a single "D" shaped structure on a ridge nose to the south of the buried midden. PO39 is a highly unusual site type in Puerto Rico, as there was no evidence it had ever been used as a domestic occupation. This paper discusses the results of the PO39 excavation, and interprets the site as a local ceremonial center.

Geib, Phil R. (Navajo Nation)

[107] **Plain Weave Sandals and Middle Archaic Occupancy of the Central Colorado Plateau**

Archaeologists have identified a Middle Archaic break in occupancy of the Colorado Plateau based on a gap in radiocarbon dates between 6000 and 5000 B.P., and the evident abandonment of several important caves. Plain weave sandals from shelters of the central Colorado Plateau were radiocarbon dated to determine if the gap in dates is illusory and if the abandonment of certain shelters resulted from change in regional settlement patterns. The sandals range in age from 6900 to 3200 B.P., providing evidence for continuity in population and culture from early to late Archaic, but change in the locations of residential bases.

[67] (*see Warburton, Miranda*)

George, David R. and *Jeffrey C. M. Bendremer* (both, Connecticut)

[71] **Late Woodland Subsistence and the Origins of Horticulture in Southern New England**

Recent discoveries in New England indicate that maize horticulture appears in the region at about

A.D. 1000 or the beginning of the Late Woodland period. We observe, however, that there is significant variability in the subsistence patterns of coastal vs. inland riverine populations with evidence of intensive maize horticulture being limited to Late Woodland sites located in inland areas. The subsistence strategies associated with various ecoregions of southern New England are described and compared to those found in other areas of the Northeast.

Geovannini, Helga (Universidad de las Américas); [66] (see *Plunket, Patricia*)

Gero, Joan M. (South Carolina) and *Maria Cristina Scattolin* (Museo Etnografico, University of Buenos Aires)

[40] **Household Production as Glue: Insights from the Early Formative of Northwestern Argentina**

Recent investigations at Yutopian, province of Catamarca (northwest Argentina) revealed an unusual complex of early formative agglutinated household structures. Preliminary evidence excavated from the intact living floor of one structure suggests cooperative production in food preparation and possible manufacture of copper artifacts. This paper will argue that the gender and kinship arrangements that shaped production sequences for local food preparation also conditioned the production of specialized goods for intersite circulation. These conclusions support the idea that the organization of productive activities reproduces and reaffirms social structures, and challenges the notion that specialized labor segregates work groups and gives rise to new social structures.

Gessler, Nicholas

[47] **A.L.I.C.E. in the Kalahari**

Computational modeling is rapidly advancing under the umbrella of *Artificial Life* to instantiate the complex phenomena of emergence, self-organization, multi-agency and evolutionary programming. The *Alife* paradigm has been invoked in social research, a trend I refer to as *Artificial Culture*. In A.L.I.C.E. (Artificial Life In Cultural Evolution), the *Aculture* strategy is used to explore global stabilizing versus local optimizing options in risk and resource sharing strategies among Kalahari hunter-gatherers.

Gibbon, Guy (Minnesota): [110] Discussant

Gibson, D. Blair (California-Los Angeles)

[81] **Please, Oh Please Don't Throw Me into That Bramble Patch...Reconstruction Chiefdoms in the Burren of Co. Clare, Ireland**

The Cahercommaun Project was initiated in 1984 to study in detail the organization of a 9th century A.D. Irish chiefdom. The research design set out a two-tiered region survey strategy with test excavation, focusing on settlements and field boundary wall systems. Though the strategy showed promise in revealing the internal organization of the chiefdom's population, and the social demarcations of the landscape, it proved inadequate to the task of boundary detection. The project's methodology will be evaluated against the goals of reconstructing chiefdom scale polities from the archaeological record.

Gibson, Jon L. (Southwestern Louisiana)

[104] **The Sacred and the Secular at the Poverty Point Site**

Artifacts recovered from different sections of the Poverty Point earthworks are distinct. Fill assemblages are dominated by recycled and curated materials as well as baked-clay cooking-object fragments. Embankment-top exhibit a wider variety, higher numbers of whole objects, features and other indications of intensive, stable, domestic occupation. But the large array of ornaments and representative (zoomorphic) artifacts and renderings have historic counterparts (or homologues) in the religious and ceremonial lore of Southern Indians. It is suggested that Poverty Point functioned, alternatively and simultaneously, as a residential and ceremonial place at various times in its development.

Giesso, Martin (Chicago)

[11] **Working For the Lords: Potential Evidence of Taxation in the Tiwanaku State Heartland** I will discuss the evidence that could indicate that some of Tiwanaku's urban household groups (ayllus) were manufacturing stone tools for use outside of the household level, in what I interpret as a potential indication of household taxation by Tiwanaku elites during the IV and V periods (300-1000 D.C.). Both local (cryptocrystalline silicates) and exotic (obsidian) fine-grained raw materials were used. Evidences from the urban sites of Tiwanaku and Lukurmata will be compared with those from rural sites in the Tiwanaku valley.

Gilman, Patricia A. (Oklahoma): [92] Discussant

Gilpin, Dennis (SWCA, Inc.)

[111] **Anasazi Community Architecture Along the Lower Puerco River, Northeastern Arizona** Studying the Chacoan system as an isolated phenomenon neglects its antecedents and results. The lower Puerco River valley of northeastern Arizona, on the southwestern frontier of the Chacoan system, contains the full range of Anasazi community architecture from isolated great kivas (dating as early as the Basketmaker II period) through Chacoan-style great houses to aggregated pueblos of the thirteenth and fourteenth centuries. Great kivas and great houses may represent specialized ritual architecture, but contain no architectural features or attributes that are not also found in smaller residential sites. Aggregated pueblos combined residential and ritual architecture in a single building.

Giria, Evgenij (Institute of Material Culture History, St. Petersburg, Russia): [97] (see *Bradley, Bruce A.*)

Glascok, Michael D. (Research Reactor-Missouri): [57] (see *Blades, Brooke*); [94] (see *Cackler, Paul*); [126] (see *Glowacki, Donna M.*)

Glascok, Michael D. (Research Reactor-Missouri) and *Tom Beard* (Landmark Archaeological/Environmental Services)

[14] **Analysis of Chert Samples from the Mt. Vernon Site, 12PO885, Mt. Vernon, Indiana** The Mt. Vernon Site (12PO885) is one of the five largest Hopewell Indian burial mounds in the nation and dates to about A.D. 50. The mound was destroyed and located in 1988 but some materials were later recovered. A small sample of chert artifacts (cache blades) from the site along with pertinent source specimens for reference was submitted for chemical characterization and sourcing by neutron activation analysis at the Missouri University Research Reactor (MURR). Preliminary results indicate that chert sources from Ohio to Missouri may have been utilized by the prehistoric inhabitants.

Glowacki, Donna M. and *M. D. Glascok* (both, Research Reactor-Missouri)

[126] **The Nature of Production and Exchange in the Sand Canyon Locality Based on Compositional Groups Formed by Neutron Activation Analysis**

The chemical characterization of Mesa Verde variety black-on-white bowls and clay sources from Castle Rock and Sand Canyon Pueblo sites in southwestern Colorado has provided insights into the nature of production and exchange in the Sand Canyon Locality. The Mesa Verde variety black-on-white bowls sampled from these sites were locally produced. The data also suggest that exchange occurred between Castle Rock and Sand Canyon Pueblo. This evidence for exchange is interesting given that one possible scenario for the social relationship of the two sites is that they were competing for resources.

Glowacki, Mary (Brandeis)

[53] **Ceremony, Ritual, and the Control of Water: Wari Administration in the Southern Highlands Valley of Cuzco**

Middle Horizon (ca. A.D. 560-900) sites in the Cuzco Valley include the planned architectural complex of Pikillacta, considered the southern provincial administrative center of the Wari expansionist state. Results of analysis of Pikillacta pottery and other data point to ceremonial and ritual activities with analogs in Inca state administration. There are ceremonies of feasting and drinking, a form of reciprocity for labor and service carried out at Inca provincial administrative centers, and ritual practices of ancestor and *huaca* worship for the cosmological control of water, an impetus in Inca imperial expansion. These analogs offer potential insight into understanding Wari expansionism.

Godley, David (Monash University): [96] (see *Bishop, Paul*)

Goebel, Ted (Southern Oregon State)

[97] **A New Look at the Inner Asian Early Upper Paleolithic**

Most students of the Paleolithic consider Siberia and surrounding Inner Asia a vast archaeological void. Nothing could be further from the truth. Recent work in the region has unveiled a mid-Upper Pleistocene record that documents a radical shift in human behavior around 45,000-40,000 years ago. Dozens of sites can now be grouped within an early Upper Paleolithic technocomplex. This technocomplex is marked by a dramatic increase in the production of blades, bifaces, and burins, and the concomitant disappearance of Levallois technologies. In addition, a series of tool forms appear in greater frequencies (namely retouched pointed blades, end scrapers, burins, wedges, graters, and bifaces). Antler points and bone awls and needles occur for the first time, as do items of personal adornment and, possibly, mobiliary art. Sites documenting the initial Upper Paleolithic

occur throughout the region in south Siberia, Russian Far East, North China, Mongolia, Kazakhstan, Uzbekistan, and Afghanistan. Clearly this was not an isolated event.

Gold, Debra L. (Michigan)

[129] **Late Prehistoric Sociopolitical Organization in Piedmont Virginia: New Evidence From the Rapidan Mound Site**

Recent studies of late prehistoric interior Virginia have reexamined traditional interpretations of a "simple" foraging society and provide evidence suggesting a ranked system of sociopolitical organization during the Late Woodland period. Rapidan Mound is a Late Woodland (A.D. 900-1607) accretional mound which may have originally contained more than 1000 individuals in multiple secondary interments. This paper presents results of analysis of the human skeletal remains from this site. New insights are gained by examining three lines of evidence for differential social-ranking: treatment of individuals during life, during primary interment or post-mortem processing, and during interment in the mound.

Goldstein, Paul (American Museum of Natural History)

[49] **Settlement Patterns of the Arica Valley, Chile: New Data and the Legacy of Arica's Veija Escuela**

In the three decades since Percy Dauelsberg established the Azapa Valley's prominent place in the culture history of the south-central Andes, urban and agricultural development has changed the face of that valley almost beyond recognition. Despite the subsequent destruction of some of the sites reported by Dauelsberg and his colleagues, the results of early excavations provide an invaluable record, particularly for the mortuary component of Azapa archaeology. A systematic survey of the Azapa Valley conducted in 1992 supplements previous site inventories with new data on the distribution of domestic settlement. In concert, these data illuminate issues of indigenous agrarian settlement, early altiplano-coastal interaction, Tiwanaku colonization, and Post-Tiwanaku political development.

[87] (see *Driskell, Boyce*)

Goldstein, Lynne (Wisconsin)

[91A] **NAGPRA and the Disposition of Unaffiliated Human Remains: Introduction**

Update on issues surrounding implementation of the Native American Graves Protection and Repatriation Act.

Goodman, Wendy (Tennessee): [69] (see *Barner, Wendell*)

Gonlin, Nan (Kennesaw State)

[37] **Ancestors in the Countryside: Interpreting Rural Maya Burial Patterns**

Rural burials are not common throughout Mesoamerica. These burials, when recovered, provide for interesting analysis as to their meaning and importance. The interpretative framework for this task is based on P. McAnany's work on ancestor veneration in the Maya region. Burial of people of stature in the rural areas may be connected to land tenure and rights. Data come primarily from Copan, Honduras, but other Maya sites further illustrate this Classic Maya custom. The practice of ancestor veneration is pervasive, encompassing all social classes.

Gonsior, LeRoy (Minnesota Historical Society)

[83] **Investigation of the Cedar Valley Chert Source Area in Minnesota: Patterns of Regional Use**

Recent investigation in southeastern Minnesota identified a cluster of Cedar Valley chert (CVC) lithic procurement sites designated as the 275 hectare NRHP Cedar Valley Chert Archaeological District. CVC is a unique Devonian-aged silicate of moderate to high quality that was sought and extensively utilized by hunter-gatherers with a curatory technology. Review of regional data and sites within the CVC Archaeological District indicate this lithic material was exploited continuously over the last 12,000 years with intensive use from the Early Paleoindian through the Middle Archaic Period.

Goodby, Robert G. (New Hampshire)

[62] **Technological Patterning and Social Boundaries: Ceramic Variability in Southern New England, A.D. 1000-1675**

Archaeologists in southern New England have long noted the stylistic elaboration of ceramic vessels recovered from 17th-century "contact period" sites. Interpretations of these vessels have traditionally assumed a relationship between particular ceramic styles and individual tribal groups. This study argues that technological variation viewed diachronically indicates strong historical continuity between pre-contact and contact period ceramics, but that the spatial distribution of technological style does not correspond to social boundaries reported for the 17th century. It is suggested that technological styles reflect older, deeper social boundaries that are transformed and renegotiated

during the contact period in response to European colonialism.

Gopher, Avi and Ram Gophna (both, Tel Aviv University)

[95] **The Sixth Millennium B.C. in the Southern Levant—A Chronostratigraphy**

A revised cultural sequence of the sixth millennium B.C. in the southern Levant is presented, with the PPNC extending into the sixth millennium B.C., and pottery-bearing entities appearing shortly afterwards. The debate as to whether the Yarmukian and the Lodian (Jericho IX) appear sequentially or represent contemporaneous geographically distinct entities continues. It can be shown stratigraphically and by seriating lithics and pottery that the Yarmukian appeared earlier, occupying the second half of the sixth millennium B.C. The Lodian is an early fifth-millennium B.C. entity, derived from the Yarmukian but deserving independent status.

Gophna, Ram (Tel Aviv University): [95] (see *Gopher, Avi*)

Gosselain, Olivier P. (University of Brussels)

[62] **Social and Technical Identity Among South-Cameroonian Potters**

Comparison of pottery manufacturing technologies among 21 ethnolinguistic groups in Cameroon identifies differences in the manufacturing sequence. Stages in the *chaîne opératoire* are excellent markers of ethnicity: they are free from any material constraint and depend entirely on the technical tradition in which the artisan learned the craft. The acquisition of motor patterns related to shaping leaves little room for personal initiative, and the ethnic identity of the instructor and the apprentice is nearly always identical. From one generation to another, the geographic spread of knowledge is narrow and rarely exceeds the boundaries of the group in which the artisan lives.

Graber, Robert Bates (Northeast Missouri State) and *Michael T. Dunne*

[47] **Formalizing Population-Pressure Theory with Differential Equations**

Human population is mathematically definable in geographical, nutritional, or political terms. Differentiating each definition with respect to time leads to rigorous measures of the extent to which a growing population is encountering inhibition of postulated inherent tendencies toward proportional increase in the area it inhabits, the amount of food it produces, and the number of polities into which it is divided. Theoretical progress and problems resulting from attempts to interrelate the three definitions are summarized.

Graham, Russell W. (Illinois State Museum): [38] Participant; [110] (see *Falk, Carl*)

Graves, Michael W. (Hawaii): [69] (see *Ladefoged, Thegn*)

Graves, William (Arizona State)

[56] **Ceremonial Feasting and Long Distance Exchange: Implications for Protohistoric Social Organization among the Rio Grande Pueblos, New Mexico**

Glaze ware ceramics from Gran Quivira and Pueblo Colorado provide important data concerning intervillage relations within a cluster of protohistoric (A.D. 1450-1600) Rio Grande pueblos. Ethnohistoric and archaeological data suggest that Gran Quivira may have been more prominent than neighboring villages, such as Pueblo Colorado. This paper tests the hypothesis that the two pueblos were ranked politically by examining the extent of ceremonial feasting and differential access to long distance exchange networks. An analysis of glaze-decorated ceramic bowls will measure involvement in these prestige-building activities at each village to determine if a preeminent position can be attributed to Gran Quivira.

Grayson, Donald K. (Washington): [9] Discussant; [38] Participant

Green, Stanton W. (Clarion)

[113] **Space, the Last Frontier: Method, Theory, and Spatial Analysis**

The interpretation of form and behavior as it occurs in space is fundamental to all archaeological undertakings. Understandably, therefore, archaeologists have long discussed and debated the theories used to conceptualize spatial phenomena and the methods for acquiring, describing and analyzing and even presenting spatial data. How far have we come in developing spatial method and theory? Are we indeed thinking about space differently than we were 20 years ago? Are the methods we are now employing qualitatively different from the early days of New Archaeology? This paper will argue, yes, in light of advances in landscape theory and related methodologies.

Green, William (Iowa): [33] (see *Whelan, Mary K.*)

Greenfield, Haskel J. (Manitoba)

[31] **Identification of Activity Areas on Early Neolithic Settlements in the Central Balkans: A Comparison of Surface Collection and Remote Sensing with Excavation Data.**

Excavations in the Balkans have traditionally ignored the benefits of preexcavation methodological strategies that help identify potential areas of excavation. Various techniques (surface collection, auguring, magnetometer and resistivity surveys) were applied prior to excavation to identify the distribution of activity areas in an Early Neolithic Starcevo culture settlement (Blagotin) from the central Balkans (Serbia). The results were then tested with systematic excavation of the area. This paper will discuss the theoretical issues and methodological strategies involved in the identification of activity areas in early agricultural settlements from the central Balkans.

Greenlee, Diana M. (Washington): [72] (see *Dunnell, Robert C.*)

Greenwald, David H. (SWCA Inc.)

[67] **Linear Archaeology: What Piece of the Puzzle Are We Really Getting?**

Dutch Canal Ruin is used as an example of a site that was initially investigated as a transportation corridor and later as a spatially extensive area. The Arizona Department of Transportation ROW provided basic information about the site, indicating that it was composed of Pioneer and Colonial period fieldhouses. The ADOT ROW failed to identify to Colonial period occupation as the dominant period of occupation at the site, as well as the Classic and post-Classic period components. In this case, the linear project provided interesting and important information about the site but failed to provide data representative of the overall site.

Greer, John (Missouri-Columbia): [135] (see *Greer, Mavis*)

Greer, Mavis and John Greer (both, Missouri-Columbia)

[135] **Spatial Distribution of Pictograph Sites in Central Montana**

Rock art survey in the Smith River drainage of Central Montana has resulted in over 60 pictograph sites. Painting locations were selected from thousands of suitable caves, rockshelters, and limestone bluffs. Spatial distribution analysis indicates that site selection patterns are based on such factors as drainage confluences, ease of accessibility from the top or bottom of the canyon, unusually expansive views out from the site, and impressive visual effect of the site when viewed from below.

Gremillion, Kristen J. (Ohio State) and *Kristin D. Sobolik* (Maine)

[109] **Prehistoric Diet and Plant Foods at Salts and Mammoth Caves, Kentucky**

Macrobotanical and pollen analyses were conducted on 12 directly dated paleofecal samples that were deposited in Salts and Mammoth caves in west central Kentucky between ca. 2700 B.P. and 2300 B.P. Results indicate consumption of a variety of plant foods, including substantial quantities of crops such as chenopod, squash, sumpweed, sunflower, and maygrass. Pollen evidence indicates that flowers or inflorescences of many of these plants were also ingested, in some cases independently of the seeds and/or fruits. This analysis illustrates the complementary nature of the contributions made by pollen and macrobotanical analysis of paleofecal material toward determining diet and seasonality of deposition.

Griffitts, Janet L.: [30] (see *Mobley-Tanaka, Jeannette*)

Grube, Nikolai (Universitat Bonn): [52] (see *Demarest, Arthur*); [52] (see *Haines, Helen R.*)

Grumet, Bob (National Park Service)

[134] **The Paleoindian National Historic Landmark Theme Study: Progress and Prospects**

The Paleoindian National Historic Landmark Theme Study is the latest project developed through The National Park Service Archeological Assistance Program's Archeological NHL Initiative. This paper traces the development of the project, outlines its organizational framework, assesses its current status, and examines its prospects and possibilities.

Guderjan, Thomas H. (St. Mary's)

[37] **Aspects of Maya Settlement in Northern Belize: The View from Blue Creek.**

Intervals of rapid Holocene landscape and environmental evolution of the northern American Bottom of the Mississippi are examined as a context for further discussions of culture change. Early and late Holocene changes in channel morphology and location, discharge, flood magnitude and frequency, sediment budgets, and depositional and erosional foci resulted in intervals of valley environmental changes with likely resource and habit consequences.

[52] (see *Haines, Helen R.*)

Gundrum, Darrell S. (Illinois-Urbana/Champaign)

[53] **Tajahuana: Paracas Walls Are Coming Down**

Tajahuana is a large, hilltop, fortified site in the middle Ica Valley, south coastal Peru. Although crucial to the interpretation of sociopolitical events in Ica during the dynamic, unstable late Paracas period, Tajahuana has received little archaeological attention. My recent research demonstrates that Tajahuana is larger and more complex than previously thought. I provide insight into social, political, economic, and symbolic strategies of Ica's Paracas population through analysis of site layout, architectural features, and sacred landscape. I indicate how additional research at Tajahuana and in the middle Ica Valley can address many problems still confronting Paracas research overall.

Haas, Jonathan (Field Museum of Natural History)

[91A] **Recommendations for the Disposition of Unclaimed and Unaffiliated Remains**

Presentation of proposed recommendations of the Department of the Interior's NAGPRA Review Committee.

Haas, Jonathan (Field Museum of Natural History) and *Winifred Creamer* (Northern Illinois)

[19] **The Historic Record of Pueblo Warfare**

Although the Pueblo people of the American Southwest are widely recognized for being peaceful in recent times, there is archaeological evidence of warfare and conflict in the Pueblo area going back at least 700 years. Complementing the archaeological record, there are also written and oral historical accounts of wars, battles, raids, etc. among the Pueblos from the period of initial Spanish contact in the 16th century through the end of the 19th century. The present paper discusses some of the historical evidence of warfare among the Pueblos and uses it to provide a background for the archaeological investigation of war and conflict in the region.

Haas, Herbert (Desert Research Institute, Reno): [110] (see *Ahler, Stanley*)

Haberle, Simon (Smithsonian Tropical Research Institute)

[96] **Agriculture in Isolation?: The Development of Agrarian Systems in the Mountainous Tropical Environments of Melanesia**

New paleoenvironmental data from the high inland basins of the island of New Guinea provide a detailed record of the influence of climatic changes and human activity on the vegetation from before 30,000 B.P. through to the present. Early human inhabitants of these high basins adapted to a cold and wet late Pleistocene environment. The exploitation of local faunal (megafauna now largely extinct) and flora (e.g. *Pandanus* sp.) resources are considered to have been an important part of subsistence activity for the early inhabitants. A model is proposed for the development of agriculture in the high inland basins of New Guinea during the late Pleistocene, which places importance on rapidly changing climatic factors that force early foraging subsistence systems to be altered toward more controlled or managed subsistence systems.

Habicht-Mauche, Judith A. (California-Santa Cruz): [56] Discussant

Haines, Helen R. (May Research Programme), *Nikolai Grube* (Universitat Bonn), and *Thomas Guderjan* (St. Mary's)

[52] **The Faces of Change: A Discussion of the Temple of the Masks, Blue Creek Ruin Belize**

A consideration of the attributes of Str. 9 ("The Temple of the Masks") at the Blue Creek Ruin, Belize. Discussing, through analysis of the iconography, architectural traits, and its association with surrounding structures and overall location, the structure's significance as both the physical center of the site, as well as its possible religious role, and how these aspects are reflected in the overall dynamics of the site, and its political role in the Mayan hierarchy of Late Classic cities.

Hajic, Ed and Sheena K. Beaverson

[59] **Fluvial Discontinuities in the American Bottom as Context for Evaluating Cultural Discontinuities**

Discontinuities in behavior and culture are often in response to environmental discontinuities. Intervals of rapid Holocene landscape and environmental evolution of the northern American Bottom of the Mississippi are examined as a context for further discussions of culture change. Early and late Holocene changes in channel morphology and location, discharge, flood magnitude and frequency, sediment budgets, and depositional and erosional foci resulted in intervals of valley environmental changes with likely resource and habit consequences.

Hall, Edwin S. (SUNY-Brockport) and *Richard E. Reanier* (Reanier & Associates)

[121] **Late Prehistoric Monumental Architecture in the Alaskan Arctic.**

A study of Late Prehistoric villages in the western Brooks Range has recently documented details of large boulder lined structures thought analogous to historic period *karigis*, or ceremonial houses.

First investigated in the 1960s by Irving at Kinyiksukvik and Desperation Lakes, these structures have also been documented at Feniak and Burial Lakes. Many of the boulders, some exceeding 1,000 kg, bear unusual designs in the form of pecked pits and patterns of subparallel and intersecting engraved lines. Although the meanings of these designs are presently unknown, their similarities suggest the Feniak, Desperation, and Burial Lake villages were part of a single settlement system.

Halverson, Holly P. (MVAC-Wisconsin-La Crosse)

[14] **An Oneota Village and Cemetery in La Crosse, Wisconsin: The Gundersen Site**
A well-preserved Oneota site (the Gundersen Site) near downtown La Crosse shows evidence of habitation and mortuary activities during three separate periods of occupation approximately A.D. 1300-1550. This site contained more than 700 refuse pits, 53 burials and a series of postmolds. The burials and possibly the associated structures, have been dated to the Pammel Creek Phase, while the habitation debris dates predominately to the earlier Brice Prairie and the later Valley View phases. The habitation debris documents intensive agricultural production and riverine exploitation, while the mortuary data suggests differential distribution of burial goods within the population.

Hamilton, Elizabeth (Pennsylvania)

[31] **Technology and Social Change: The Effects of the Roman Conquest on the Native Copper-Working Tradition at the Titelberg, G.D. Luxembourg**

Hamilton, Nathan D. and Matthew Bampton (both, Southern Maine)

[14] **A Time Transgressive GIS of Holocene Environments in Casco Bay Estuary, Gulf of Maine**

Geoarchaeological investigations of Casco Bay Estuary have identified over 500 prehistoric sites. Data gathered describe vegetation, climate, sea level, subsistence strategies, and settlement patterns from 10,000 B.P. to the present. Radiocarbon dating, sedimentological and GIS analysis of vibracore samples are used to establish paleo shorelines and characterize past coastal environments in relation to prehistoric sites. This provides a basis for defining site value and projecting site risk, so helping formulation of a resource management plan. Future plans are to make the GIS available to scholars, planners and communities to enhance public understanding of, and involvement in, resource management in the region.

Hammond, Norman (Boston): [88] Discussant

Hammond, Norman (Boston) and *Gair Tourtellot* (Boston)

[52] **Racing the Scythe: 1994 Investigations at La Milpa, Belize**

The third season of investigations at the Classic Maya city of La Milpa in northwestern Belize was focused on mapping, collecting, and testing settlement in rugged terrain up to 3 km from the central plazas. A dual strategy of transect and randomized area sample mapping was applied to investigate peripheral settlement rapidly. Preclassic and Early Classic occupation was concentrated in the center, with a dramatic change to ubiquitous Late/Terminal Classic constructions. Widespread landscape features indicating a managed landscape may have been the result of attempts to provision a rapidly expanding population at the end of the Classic period.

Hancock, R. G. V. (Toronto), *R. M. Farquhar* (Toronto), and *L. A. Pavlish* (Toronto)

[98] **Archaeological Copper Analyses at the University of Toronto**

Several thousand samples from copper-based artifacts from various locations in Eastern North America were analyzed chemically at the SLOWPOKE Reactor Facility, to sort native copper from European copper and brass. Platinum group element distributions in selected samples of European and North American copper were analyzed at the IsoTrace Facility and the data showed clear separations. Radiocarbon dating at the IsoTrace Facility was employed to determine the age of organic materials that were preserved by copper salts. Lead Isotope Laboratory analyses of copper samples from both European and North American sources showed clear differences.

Hanes, Richard C. (Bureau of Land Management)

[132] **Treaty Rights, Spirituality, and Ecosystems in the Pacific Northwest**

Many American tribes in the interior Pacific Northwest reserved rights to a wide range of resources on unclaimed lands when treaties were negotiated in the 1850s. The nature of these reserved rights together with exploration of the differing worldviews of the physical environment between native and United States cultures is provided in the context of proposed ecosystem management strategies for all public lands in the Northwest managed by the U.S. Forest Service and BLM.

Hanks, Herrick E. (Bureau of Land Management)

[80] **Integrating Cultural Landscapes with Geographic Scales Used in Ecosystem Management: An Archaeological Perspective**

In order for the archaeological community to begin defining its role in the current shift from traditional resource management to an integrated ecosystem management, archaeologists needed to address some basic questions regarding cultural landscapes and geographic scale. The session, therefore, addressed the topics of landscape definition, geographic scales, the dynamics of landscapes and cultural relativity, landscapes and the archaeological record. The session results and recommendations for future actions will be briefly discussed.
[132] Discussant

Hanks, Nancy (Western Illinois): [42] (see *Bullock, Peter*)

Hannus, L. Adrien (Augustana): [110] (see *Winham, R. Peter*)

Hansell, Patricia (Temple): [34] (see *Ranere, Anthony J.*)

Hanson, Diane K. (Puerto Rico)

[103] **Prehistoric Aleut Mobility and Settlement**

Homogenization of artifact styles along the Aleutian chain has been used as evidence for extensive movement or intergroup contact in the archipelago. Site location, however, is limited by the amount of land suitable for habitation (estimated at 5-10% of the available coastline by McCartney); marine faunal distributions including anadromous fish, large migratory sea mammals, and shellfish; and even volcanic activity. These factors do not limit movement along the island so much as they restrict site locations; therefore, large Aleut sites may be the result of repeated occupations of a few ideal locations rather than an indication of decreasing mobility.

Hanson, Douglas B. (Forsyth Dental Center)

[35] **Health and Disease in Island Ecosystems: The Status of Bioarchaeological Research in Micronesia**

The small volcanic islands and atolls of Micronesia have limited resources that are vulnerable to the effects of typhoons, earthquakes, and long-term climatologic events such as drought. Although the small human groups that have populated these islands for nearly 5,000 years have developed coping strategies, the effectiveness of these strategies is varied and the biological impact is reflected in skeletal samples. This paper reviews the skeletal evidence for biological responses to environmental stress in Micronesia, with particular emphasis on the Mariana islands.

Hardy, Bruce L. (Indiana)

[41] **Functional Analysis of Stone Tools from the Middle Paleolithic Site of La Quina, France**

A combination of analytical techniques, including use-wear (edge damage and micropolishes), residue, and DNA analysis, was used to investigate stone tool function at the Middle Paleolithic site of La Quina, France. The majority of traces of function found through use-wear and residue analysis are indicative of plant processing activities. Gymnosperm tissue was identified on some tools suggesting that processing of wood was an important activity at La Quina. DNA has also been recovered from a sample of tools and has been identified to species. Multiple techniques of functional analysis increase the amount of information recovered from stone tools.

Hare, Timothy S. (SUNY-Albany): [90] (see *Cascio, Lisa M.*)

Hargrove, Thomas (Archaeological Research Consultants) and *Alicia L. Wise* (North Carolina)

[14] **Geophysical Survey on Historic and Prehistoric Sites in North Carolina**

Presentation of results from magnetometer and resistivity surveys of historic and prehistoric sites in North Carolina including Somerset Place Plantation and Town Creek Indian Mound. Comparison of the two geophysical techniques and a discussion of their complementarity. Comparison of geophysical results to information gained through excavation and survey of the same sites. Demonstration of the applicability of these geophysical techniques to other sites in the southeastern United States.

Harritt, Roger

[100] **Late Prehistoric Subsistence Seasonality and Variability Across the Northern Alaska Peninsula**

Comparisons of faunal remains from the lower Naknek River drainage, the upper drainage, and Pacific coast reveal that important differences existed in subsistence in each area. A terrestrial mammal and salmon focus is represented at upper drainage sites, A.D. 1,100-1,800; sites on the lower drainage with only a few beluga and seal bones reflect some interest in marine resources. Pacific coast remains are approximately 50% shellfish, salmon and birds, and 50% mammals composed primarily of seal. Salmon was important in each area; with other fauna represented, each area reflects distinctive subsistence foci and human groupings across the northern Peninsula.

Harrold, Francis B. (Texas-Arlington): [97] Discussant

Harry, Karen G. (Statistical Research)
[78] **Village-Level Craft Specialization: Investigation of a Prehistoric Ceramic Production Center in Southern Arizona**

Ceramic compositional data have indicated that, during the Rincon phase (ca. A.D. 900–1100), pottery production in the Tucson Basin was centered on the West Branch community of the Santa Cruz River. Using two types of data, this paper examines possible causes of the ceramic production organization. Laboratory experiments are used to evaluate the quality of the available clays and tempers, and excavation data provide information on the subsistence potential of the Santa Cruz River area. Information from these diverse sets of data is synthesized and compared against models that have been previously developed to explain the development of ceramic specialization.

Hartshorn, Karen (Harvard): [41] (see Tykot, Robert H.)

Hassig, Ross (Oklahoma): [19] Discussant

Hastorf, Christine (California-Berkeley): [65] Discussant

Hastorf, Christine (California-Berkeley), *Matthew Bandy* (California-Berkeley), *Lee Steadman* (California-Berkeley), and *Sonia Alconini* (Pittsburgh)
[11] **New Evidence for Ritual and Other Activities at Chiripa**

The 1992 excavations at Chiripa were planned to seek domestic areas outside of the mound that had been partially excavated. Excavation units were placed north and south at the mound. Much of the upper layers were mixed, but we did discern some activity areas and can see some shifts in style of use at the site as well as changes in artifact frequencies and densities between the Formative levels and the later Tiwanaku phases. Ritual activity is present throughout. Rather than domestic areas we found a Formative temple and Tiwanaku phase surfaces that did not seem domestic.

Hausler-Knecht, Philomena (Harvard) and *Donald W. Clark* (Canadian Museum of Civilization)
[100] **Specialized Activity Areas and the Manufacture of Ground Slate Tools at Ocean Bay Sites (6500 B.P.—3500 B.P.) on the Kodiak Archipelago of Alaska**

Comparisons of assemblages from three Ocean Bay period sites on the Kodiak archipelago reveal interesting differences in economic activities. Some of these differences reflect local environmental variables and seasonality. Other differences relate to specialized manufacturing activities. The conclusion which is reached is that ground slate tool production had become specialized during the later stages of the Ocean Bay tradition (5100 B.P.—3500 B.P.) The existence of specialized manufacturing sites had gone unrecognized in previous discussions of the Ocean Bay period.

Hautaniemi, Susan I. (Massachusetts-Amherst)

[102] **Fielding a Critical Archaeology**

Intensive excavation began in 1994 at the Moors Homelot in Deerfield, Massachusetts with a number of critical questions. In particular, we were interested in how class, gender and race/ethnic positions both created and were reinforced by the spatial dimensions of work during the second half of the 19th century. The '94 excavations attempted to identify domestic work spaces and evaluate their potential for addressing these questions: who worked at the site? what work did they do? with whom? for whom? The paper will discuss the results of the '94 summer field school's excavations in light of our research goals.

Hayashida, Frances (Dumbarton Oaks)

[40] **Administered Craft Production in the Inka State**

Ethnohistorical and archaeological data are used to explore administered craft production in the Inka state. It is proposed that an understanding of Inka craft production and the interpretation of Inka material culture is facilitated by considering (1) the objectives and strategies of the state, (2) the existing traditions of recruited artisans, who came from diverse cultural backgrounds, and (3) the specific relations of the state with local polities.

Haynes, C. Vance (Arizona): [126] (see Huckell, Bruce B.)

Haynes, C. Vance (Arizona), *Michael McFaul* (Laramie Soil Service), *Robert H. Brunswig, Jr.* (Northern Colorado), and *Kenneth D. Hopkins* (Northern Colorado)

[70] **Kersey and Kuner Terrace Investigations at the Dent and Bernhardt Sites, Colorado**
Core sampling at the Dent site indicates an extension of the Kersey strath terrace under the tracks. Three hundred m south the Kuner terrace has been exposed by a road cut at the Bernhardt site. An Archaic hearth dated 4030±60 B.P. is near the top of 1 m thick eolian sand overlying 1 m of the

fine grained alluvium overlying sand and gravel of the Kuner strath with an AMS radiocarbon age of 10,105±90 B.P. During quasi stability of the South Platte River at the Kuner level Paleoindians from Clovis to Cody hunted megafauna on the Kersey terrace during the Younger Dryas.

Haynes, Gregory M. (Desert Research Institute, Reno) and *Paul E. Buck* (Desert Research Institute, Reno)

[121] **Technological Diversity at Prehistoric Sites near Yucca Mountain, Nye County, Nevada.** Diversity measures are used to examine stone tool technology of lithic scatters and toolstone quarries in southern Nevada. The construction of technological classes is discussed, focusing on the use of existing data bases. Randomly generated data with similar parameters as real data are used to control for sample size differences between sites. Diversity is seen to be related in part to proximity to toolstone sources and the kinds of raw material available. Temporal trends in diversity measures are also examined.

Hays-Gilpin, Kelley (Navajo Nation Archaeology Department)

[39] **Anasazi Rock Art's Changing Social Contexts**

Basketmaker III period (ca. A.D. 500–700) design styles in rock art differ from ceramics, textiles, and baskets. Artifact functions and the spatial organization rock art in the 7th century site of Broken Flute Cave suggest that styles were partitioned along gender lines. In contrast, Pueblo III period (ca. A.D. 1150–1300) designs styles cross-cut media. Textile designs appear in rock art as well as pottery, and life forms previously associated with rock art become more common on pottery. Changing distributions of decorative styles among media provide clues to macroregional interaction and the organization of craft production.

Hayward, Michele H. (Panamerican Consultants): [34] (see Cinquino, Michael A.)

Headrick, Annabeth (Texas-Austin)

[82] **The Street of the Dead...It Really Was: The Potential of the Mummy Bundle at Teotihuacan**

Perhaps the most recognizable art from Teotihuacan are the stone masks. Despite the large number of surviving masks, their ritual function remains unclear. Evidence from recent excavations suggests the masks were originally fastened to the mummy bundles of Teotihuacan's elite ancestors and installed in the temples on the main avenue. Using their ancestral bundles to lay claim to political power, the elites separated themselves from the nonelites and created a system of competing lineages. This model addresses the depersonalization of Teotihuacan art by arguing that the factional nature of the system restricted the authority of the office of the king.

Healan, Dan M. (Tulane)

[21] **Settlement and Exploitation in the Zinapécuaro-Ucareo Obsidian Source Area**

Obsidian from the Zinapécuaro-Ucareo, Michoacán source area was a widely-distributed commodity in prehispanic Mesoamerica beginning in the Formative. Recent evidence of its significant contribution to the lithic assemblages of Epiclassic and Early Postclassic settlements in Central Mexico and northern Yucatan including Tula, Xochicalco, and Chichen Itzá, raise questions about the nature of prehispanic exchange between the Bajío and mainstream Mesoamerica. Preliminary results of regional survey and excavation provide information on prehispanic settlement and obsidian exploitation in the source area that permit initial evaluation of alternative models of production and exchange.

Healy, Paul F. (Trent): [37] (see Awe, Jaime J.)

Heckenberger, Michael (Carnegie Museum of Natural History)

[32] **The Later Prehistory of the Upper Xingu Basin, Central Brazil**

Investigations in the Upper Xingu region have yielded unique data regarding the nature of late prehistoric communities in the forested lowlands of southeastern Amazonia. Numerous large (.5 – 1.0 km²) villages, fortified by extensive earthworks and interlinked by elaborate road systems, have been documented. Excavations at several sites provide evidence of a cultural continuum spanning ca. A.D. 1000–present. It is suggested that changes in macroregional sociopolitics, particularly intensified conflict, after ca. A.D. 1350, led to dramatic changes in local settlement patterns, notably population nucleation and village fortification. Local societies again underwent radical transformation after European contact, ultimately giving rise to the contemporary "Xinguano" society.

Hegmon, Michelle (New Mexico State) and Margaret Nelson (SUNY-Buffalo)

[92] **Mimbres Regional Reorganization: Ceramic and Architectural Evidence of Changing Social Relations**

At around A.D. 1150 aggregated populations in the Mimbres Valley, N.M., and surrounding areas

reorganized, and many apparently settled in dispersed farming hamlets in the eastern Mimbres region. Architecture and associated ceramic assemblages changed dramatically. Highly variable architecture is evident in both inter- and intrasite comparisons. Numerous ceramic types from much of the Southwest were added to the local Mimbres types. These developments indicate a change in regional interaction. Detailed analyses of architectural features and of decorated ceramics are used to consider the forms that social interaction might have taken.
[62] Discussant

Heldman, Donald P.: [125] (see *Scott, Elizabeth M.*)

Heller, Julie A. (Science Museum of Minnesota)

[121] **Lower Limb Skeletal Morphometrics and Mobility in Prehistoric Central California Hunter-Gatherers**

Analyses of site locations/distributions, flora, fauna, and ethno-archaeological studies have long been applied to questions of mobility among hunter-gatherers. Currently, increasing attention is being paid to an additional source of data on hunter-gatherer land-use patterns: morphological analyses of human skeletal remains. Femoral and pelvic metrics were compared for skeletal samples from Early and Late Horizon prehistoric sites in Central California. A total of six body size-standardized skeletal traits indicative of relative lower limb activity level were examined. Results indicate no significant difference between Early and Late Horizon samples for these variables.

Helskog, Knut (University of Tromsø)

[17] **Inter- and Intra-Site Variability in the Rock Art in Atta, Arctic, Norway as a Reflection of Different Meanings and Culture Groups**

This paper claims that the internal variability seen in rock art does reflect both different meanings and culture groups, synchronically, diachronically as well as spatially. This will be demonstrated for a 4,000-year time span among foragers in a fjordal arctic environment.

Helsley-Marchbanks, Anne M. (Howard Hughes Medical Institute)

[65] **The Formative Period in Chayanta, Bolivia: Investigations at the Site of Puente Mayu**
This paper will explore aspects of the Formative Period in northern Potosí, Bolivia, as exemplified by investigations at the site of Puente Mayu. In particular, some of the implications the Puente Mayu archaeological assemblage has for understanding the early Formative Period in northern Potosí and the apparent interactions the populations of the Chayanta region had with both the Wankarani and Mizque/Cochabamba Formative traditions will be discussed.

Hemphill, Brian E. (Vanderbilt)

[77] **A Craniometric Assessment of the Oxus Civilization as a Bronze Age Link Across the Indo-Iranian Borderlands**

Soviet archaeologists maintain that the Oxus Civilization (2200-1500 B.C.) served an important intermediary role connecting the Bronze Age civilizations of northwestern Iran with the Harappan Civilization of the Indus Valley. This research utilizes craniometric analysis to test this interpretation. When contrasted against data from nine sites located in northwestern Iran, eastern Iran, and the Indus Valley, multivariate statistical analysis confirm the early origin of the Oxus Civilization from northwestern Iran. By contrast, there appears to have been little biological interaction between this civilization and populations of the Indus Valley during the mature and late phases of the Harappan Civilization.

Hennon, Kerry: [72] (see *Caruso-Wessel, Terri*)

Henrickson, Robert C. (Smithsonian) and *Pamela B. Vandiver* (Smithsonian)

[58] **The Significance of the Potter's Wheel in Ancient Southwest Asia**
Research on forming and finishing methods used in pottery production in 4th-1st millennia B.C. Iran, Iraq, Syria, Turkey and Egypt show that use of the potter's wheel, whether for mass- or smaller-scale production, is often misidentified. Reconstruction of sequences of manufacture using fractography, texture analysis, and radiography demonstrate that only small vessels were thrown on the potter's wheel. Larger vessels involved varied combinations of hand-forming, turntable, and sometimes partial throwing. The technological style(s) of an assemblage, not a single forming technology or tool, must underpin study of production.

Henry, Patty

[134] **Theme Studies in the National Historic Landmarks Program**

National Historic Landmarks are buildings, sites, districts, structures, and objects that have been determined by the Secretary of the Interior to commemorate and illustrate the history and culture of the United States. The National Park Service conducts this program to designate and protect these

properties. It is a cooperative endeavor of government agencies, professionals and independent organizations sharing knowledge and working jointly to identify and preserve these properties. Potential Landmarks are identified through theme and special studies prepared or overseen by Park Service professionals. These studies provide a comparative analysis of properties associated with a specific area of American history and prehistory.

Herhahn, Cynthia (Arizona State)

[56] **The Complexity of Early Rio Grande Glaze Paints: Implications for Technology Transfer**
Anna O. Shepard called the fourteenth century Middle Rio Grande Valley the "cradle" for the development of the Rio Grande Glaze-Paint pottery, and postulated that the technology spread from there to other areas of the Rio Grande. However, little is known regarding the nature of the technology, let alone how it developed and was transferred to other areas. An electron microprobe analysis of the composition of Middle Rio Grande glaze paints suggests that the technology is less complex than expected and remarkable homogeneous. This paper explores the nature of the glaze paint technology and its implications for technology transfer.

Hermanns-Audardottir, Margret (National Museum of Iceland)

[27] **On the Early Settlement of Iceland: Reevaluation in Light of Archaeological Evidence**
The traditionally accepted beginning of the Norse colonization in Iceland is set in 870-875 A.D. This is based on secondary Medieval records, principally the Book of Icelanders (*Íslendingabók*) and the Book of Settlements (*Landnámabók*). Recent archaeological results from an excavated farm site in Herjólfssdalur on the Westman Islands (south of main Iceland) indicate that the Norse settlement has occurred earlier, eventually as early as in the 7th century. This conclusion is based on stratigraphical observations and relative chronology, tephrochronology (chronology based on volcanic ash layers and their stratigraphical distribution) and radiocarbon datings. Sod and stone building tradition reflected in the farm site and certain artifacts found clearly point to the Norse origin of this early settlement in Herjólfssdalur.

Herr, Sarah (Arizona)

[118] **Circular Great Kivas and Community Reorganization in the Upper Little Colorado Area, Arizona**

Recent research on great kivas in the Upper Little Colorado region suggests that morphological changes in great kivas reflect changing social and ideological contexts in the Chacoan and post-Chacoan periods. Spatial, temporal, and formal data on nearly 300 circular great kivas from one millennium of Southwest prehistory are explored. These data provide a context for the discussion of community reorganization during the twelfth century in the upper Little Colorado area of east-central Arizona. Instabilities caused by the movement of populations and ethnic coresidence created this need for community integration.

Herrera, David M. Pereira (Universidad Mayor de San Simon-Cochabamba): [65] (see *Brockington, Donald L.*)

Hester, Thomas R. (Texas-Austin): [37] (see *Hudler, Dale B.*)

Hester, Thomas R. (Texas-Austin) and *Harry J. Shafer* (Texas A & M)

[9] **Early Holocene Occupations in the Lower Pecos Region of Texas**

The lower Pecos River region of southwest Texas has yielded some of the most complete information available on mobile hunters and gatherers of the early Holocene. Excavations in two dry cave sites, Baker Cave and Hinds Cave, combined with information from deeply stratified alluvial sites, have provided evidence for a Late Paleoindian occupation and a detailed picture of subsistence patterns and adjustments to post-Pleistocene conditions 10,000-6000 B.P. Data from a wide variety of contexts (coprolites, hearths, etc.) are reviewed.

Hicks, Alvah M.

[70] **Amerindian Diffusion and Circumarctic Population Origins**

An extensive human population is required to substantiate the genetic and linguistic data prescribing an Amerindian presence in pre-Clovis times. This presentation will address archaeological and genetic correlations concerning Amerindian origins. Could Amerindians have contributed to the formation of the contemporary Siberian and Northeast Asian Circumpolar populations? The movement of Paleoindian Traditions into the Circumpolar regions of North America is supported by archaeological and mtDNA data if an Amerindian contribution (admixture), to the formation of these populations is presumed. This, alternate explanation, supporting Amerindian admixture as a cause for "rare Asian mtDNAs" in Circumarctic people, will be addressed.

Hiebert, Fredrik T. (Harvard) and **Katherine M. Moore** (Bentley)

[77] **The Silk Route Before Silk: The Development of Social Complexity in Western Central Asia**

Post-Soviet period research on the Bronze Age of Western Central Asia (3500-1700 B.C.) has shifted in perspective away from historical determinist explanations of social complexity. The distinctive Bronze Age culture of Central Asia includes sites along foothill slopes, river valleys and oases. The oasis settlements are better known for their subsequent role as points of organized trade along the Silk Route. Previously proposed theories of culture change in Central Asia focused on ethnic replacement through migrations and unilineal evolution of technologies. Now, attention is directed to adaptation to new environments and local control of power.

Hill, Brett (Arizona State)

[42] **Early Historic Environmental Mismanagement in the Rio Grande Area**

During the early historic period in the Rio Grande area of New Mexico the Pueblo Indians experienced social and economic crises that led to dramatic changes in their settlement patterns. Among these crises was the imposition of Spanish production demands and restrictions on mobility and resource access. A GIS comprised of physiographic and climatic data is used to evaluate and quantify the impact of these factors. Special attention is given to changes in the type and extent of agricultural production and their effect on local ecosystemic stability as demand changed and flexibility was constrained.

Hill, Christopher L. (Montana State, Museum of the Rockies)

[51] **Quaternary Stratigraphy and Geomorphic Context for Paleoindian Occurrences in Northeastern Minnesota**

Quaternary strata and landforms in northeastern Minnesota indicate a context for Paleoindian occupation associated with ice margins, proglacial lakes and post-glacial drainage systems. The Automaba ice margin was near the Cloquet River before 12,000 B.P., followed by the cloquet margin contemporaneous with Lake Upham I. The Albion and Nickerson advances occurred around 11,500 B.P. Lake Upham II existed during the Porcupine advance around 11,000 B.P. Around 10,800-9,900 B.P. Lake Agassiz drained eastward into the deglaciated Superior basin. A proglacial lake was present during the Marquette advance 9,900-9,500 B.P. and Beaver Bay and Minong Lake levels existed before 9,000 B.P.

Hill, David: [77] (see *Cunnar, Geoffrey*)

Hill, Mara D. (Texas A & M)

[92] **Discerning Classic Mimbres Household Unit Construction Sequences from Architectural and Mortuary Evidence at the Swarts Ruin**

Archival information is an important component of studies of the Mimbres culture of southwestern New Mexico; undisturbed sites are a rarity in the region. This paper applies statistical methods along with factual and theoretical advances made in more recent and better documented excavations to the unpublished data available in the Swarts Ruin fieldnotes of H. S. and C. B. Cosgrove. Because these excavations were carried out in the 1920s, at a time when Mimbres archaeology was just beginning, this research seeks to address more current issues of social organization and context as expressed in material culture found at the Swarts Ruin.

Hill, Matthew Glenn (Wisconsin) and **Lawrence C. Todd** (Northern Colorado)

[116] **Paleoindian Subsistence on the Northwestern Plains: New Data from the Casper and Agate Basin, Wyoming**

Reexamination of the bison remains from the Casper and Agate Basin sites offer new insights regarding Paleoindian butchery and carcass utilization. At Casper, limb bones were processed as complete, articulated units instead of being dismembered, defleshed and then processed for marrow; some limbs may have had large muscle masses adhering when marrow was extracted. In comparison, data from Agate Basin (Main Folsom component) suggests carcass disarticulation occurred prior to marrow removal. There is evidence that axial muscle units may have been selectively removed from both sites, perhaps an indication of human transport. Current models of Paleoindian subsistence may oversimplify bison and medium-sized artiodactyl carcass utilization.

Hill, Matthew E. and **Dean T. Sather** (both, Kansas)

[135] **The Pueblo on the Plains: Spatial Analysis of Bison Processing at the El Cuartelejo Pueblo in Western Kansas**

The El Cuartelejo pueblo was occupied near the beginning of the 18th century. Excavation of the site in the 1970s recovered numerous faunal remains of which bison were most dominant. This paper examines the processing techniques of bison and the associated activity areas. Basic documentation of the bison remains (MNI, element frequency, seasonality) and taphonomic life history of the

assemblage is also discussed. Conclusions are made pertaining to the relative importance of hunting in the group's subsistence strategy, sharing of bison products by the inhabitants, and in general, the cultural adaptations of sedentary groups living on the Plains.

Hinshelwood, Andrew

[51] **Archaic Reoccupation of Late Paleoindian Sites in Northwestern Ontario**

To date, one native copper and several chert corner-notched projectile points have been recovered from late paleoindian sites in the western Lake Superior basin. The presence of the archaic points affects both the study of late paleoindian lithic reduction traits and regional settlement patterns. It appears that archaic people reoccupied late paleoindian quarry and workshop sites for the purpose of reworking discarded cores and bifaces. The late paleoindian sites occupied active post-glacial lake shores, while the archaic presence represents inland travel.

Hirth, Kenneth, Maria Panfil, and Thomas Gardner (all, Pennsylvania State)

[66] **Prehispanic Volcanic Events in the Tetimpa Region of Puebla, Mexico, and Their Archaeological Implications**

Geoarchaeological research has identified a series of volcanic events which affected prehispanic occupation in the Tetimpa region of Puebla after 200 B.C. This paper identifies these geological events and discusses how they may have influenced prehispanic land use, settlement patterns and population levels in the Cholula-Huejotzingo region. The research indicates that volcanism had a dramatic impact on the demographic history of this region during the prehispanic era.

Hirth, Kenneth G. (Pennsylvania State): [21] Discussant

Hitchcock, Robert K. (Nebraska) and **Laurence Bartam, Jr.** (Franklin and Marshall)

[62] **Social Boundaries, Technical Systems, and the Use of Space in the Kalahari**

Understanding how social boundaries are expressed via material culture can perhaps best be accomplished ethnoarchaeologically, and "technological style" provides an instructive conceptual framework. An important variable in technical systems is the use of social space. In this paper, we present ethnoarchaeological data at several scales collected among Kua, Tyua, Tswana, Kgalagadi, and Herero agropastoralists and foragers from the eastern Kalahari in Botswana. We consider the nature of social boundaries and zones of interaction between linguistically and ethnically distinct coresident populations, and how contrasting social uses of space between various Kalahari groups generates variability in technological styles.

Ho, Chuan Kun (National Museum of Natural Science)

[16] **Land Use Patterns of Pleistocene Hominids in North China**

Two lithic technological traditions of foragers have been proposed in north China in order to highlight two regional diversity of lithic assemblages throughout the Paleolithic periods. Although the observed pattern of such a contrast was framed in a cultural historic perspective, but that diversity did suggest the adaptive trend. The purpose of this paper is first to describe the location of representative open-air and cave sites/locations of the above-mentioned traditions; and then to examine them from a taphonomic perspective; and lastly to probe the inter- and intra-assemblage variabilities. We may then examine the land use patterns of the Pleistocene hominids in north China through the discussion of morphological adaptations and the utilization of raw materials in terms of forward planning, anticipation and the organization within their paleoenvironmental contexts.

Hockett, Bryan Scott (Bureau of Land Management)

[43] **Global Positioning System (GPS) and Archaeology in Nevada**

Nevada Bureau of Land Management (BLM) archaeologists are utilizing the Global Positioning System (or GPS) during field inventories. The GPS unit in use by the Nevada BLM consists of the Trimble Receiver and MC-V Data Logger. This flexible system allows the user to record area features (such as site boundaries), line features (such as roads and fencelines), and point features (such as isolated artifacts and springs). This poster will graphically illustrate the recording of archaeological sites using the Trimble-MC-V unit and Pathfinder software. Information on satellite configuration and costs and benefits of the GPS will also be presented.

Hodge, Mary (Houston-Clear Lake): [26] (see *Parsons, Jeffrey*)

Hoffecker, John F. (Argonne National Laboratory)

[97] **The Aurignacian Phenomenon and Eastern Europe**

Roughly 40,000 years ago, Aurignacian assemblages appear across Western Europe, Central Europe, and the Near East, manifesting a remarkable degree of homogeneity and synchronicity. This phenomenon is widely thought to represent the spread of modern humans, at least in Europe. However, there is little evidence for the Aurignacian on the East European Plain, where the early

Upper Paleolithic record seems to reflect a different history of development. The explanation probably lies in the Last Glacial environmental setting of this region, and may have significant implications for the transition to modern humans in western Eurasia.

[136] (see *Moeller, Konnie L.*)

Hoffman, Brian W. (Wisconsin-Madison)

[43] **Late Prehistoric Corporate Households in the Eastern Aleutian Region**

The residential corporate group is a unit of analysis that holds tremendous potential for understanding the causes and consequences of sociopolitical complexity among village-based societies of north Pacific. The archaeology of the Aleutian Islands in particular holds great promise in this direction since shortly after A.D. 1000, the Eastern Aleuts amalgamated into large, corporate households. Termed nucleus-satellite houses, these households are seen archaeologically as a large house depression surrounded by a number of satellite depressions that served as storage facilities, living areas, and burial chambers. 1994 investigations in Peterson Lagoon on the north shore of Unimak Island provide much new data on the organization of these corporate houses, the use of the satellite features, lithic technology, and the timing of the rise of these corporate entities.

Hoffman, C. C. (Nevada-Reno)

[43] **Old Trails-New Paths: Paleo/Archaic Boundary Research in the Great Basin**

The Paleoindian/Archaic boundary in the Great Basin is neither well defined nor understood because of the limited contextual information presently available. Attempts to fill this void have precipitated the borrowing of theories concerning Paleo-inhabitants from other regions such as the Great Plains and the Southwest. However, data now available do not fit well with these borrowed theories. This poster proposes a beginning step that will, by synthesizing old research pathways into a new direction, account for the recent data. The development of long as well as short term research objectives is also discussed.

Hoffman, Christopher R. (California-Berkeley)

[124] **More Than Just Metals: Material Culture and Technology in Late Prehistoric Mallorca, Spain**

Although the heuristic separation of a single material from its material and social contexts can lead to valuable inferences, conceptually reintegrating those materials can generate equally important findings. In this case study, materials from Copper Age and Bronze Age sites on the Mediterranean island of Mallorca are examined. Although metals and metallurgy are central to this study, it is only through a contextual comparative approach that a more comprehensive understanding of the social dimensions of technology can emerge.

Hoffman, Inez Reed (Panamerican Consultants): [34] (see *Cinquino, Michael A.*)

Hoffman, Michael P. (Arkansas)

[129] **Robes of Many Colors: Rosetta Skins for Quapaw Archeology**

The painted buffalo skins offer an exciting new source of information about the culture and archeological remains of the eighteenth century Quapaw. Written accounts about native settlement, architecture, cosmology, costume, ceremony, warfare and material culture are confirmed and supplemented. The pictorial and written information helps to establish characteristics of Quapaw archeological culture so that sites of the period can be identified.

Hofman, Jack (Kansas) and *Lawrence C. Todd* (Colorado State)

[9] **Lipscomb: Just Another Folsom Bison Bonebed?**

Bison are often argued to represent the most significant element in Paleoindian diets in the Plains. The contribution of bison to the diet and economy of Paleoindian hunters may have varied depending upon time period, season, region, and ecological conditions. Bison bonebed studies document economic and technological reliance on bison, and can provide clues about Paleoindian group organization, mobility, land-use patterns, site formation, and paleoecology. Study of the Lipscomb site, the largest known Folsom-age bison bonebed, provides information pertinent to all these questions

Hohmann, Bobbi (New Mexico): [37] (see *Powis, Terry G.*)

Hohmann, John W. (Louis Berger & Associates): [43] (see *Irish, Joel D.*)

Hole, Frank (Yale)

[84] **Is Size Important? Function and Hierarchy in Neolithic Settlements**

Early Neolithic settlements in the Near East range in size up to 15 hectares, but it has been difficult to discern and relate differences in function and social hierarchy among the sites to differences in

their size. Evidence of trade and manufacture, burials, specialized architecture, and symbolic artifacts, provide avenues toward interpretation of function and hierarchy in selected examples of Neolithic communities. The implications of the geographic locations and range of time during which large sites occur, are also examined.

Holen, Steven R. (University of Nebraska State Museum)

[70] **Taphonomy of Mammoth Sites in Late Wisconsinan Loess: Natural Processes or Human Modification?**

Two mammoth sites, located in Late Wisconsinan loess in the Central Great Plains of North America, offer the opportunity to study highly fractured mammoth bone in an eolian setting. Radiocarbon dating places these sites at 14,000 and 18,500 years B.P., which agrees well with the local and regional stratigraphic sequence. Fracture patterns from these two sites are compared with fracture patterns caused by the modern natural processes, carnivore gnawing and elephant trampling, also, they are compared with ethnographic and archaeologically documented modification of proboscidean bone. Results of these comparisons suggest that human modifications is the primary taphonomic agent.

Holley, George R. (Southern Illinois-Edwardsville): [18] (see *Dobbs, Clark A.*)

Hollinger, R. Eric (Illinois-Urbana/Champaign)

[28] **Oneota Adaptations, Interactions and Cultural Extinction Viewed Through Lithic Technologies**

The Late Prehistoric Oneota Tradition of the midwestern U.S. was one of the most successful adaptations in American prehistory. The lithic technologies of these people have been viewed as rudimentary, or degenerative, containing little potential for answering significant anthropological questions. However, the success of Oneota strategies possess these questions and demands more careful consideration of their material culture. The lithic technologies of the Oneota are viewed here to assess the adaptations, interactions and eventual cultural extinction of these people and what light the most common material remains can shed on them.

Holtsford, Timothy (Missouri): [34] (see *Buckler, Edward*)

Holtz, Wendy K.: [45] (see *Cassell, Mark S.*)

Hood, J. Edward (Old Sturbridge Village)

[102] **Some Observations on Interpreting the Archaeology of a New England Village to the Public**

Interpretation of archaeological work through public programs is an important but often ambiguously successful means to inform the public about both historical and broad social issues. This paper will provide an overview of one such effort in the village of Deerfield, Massachusetts. The goals, methods, and results of this program will be discussed, and some observations about how the participants in this program conceptualized the past will be made. Attempting to understand the various conceptions and perceptive filters and metaphors that people bring to archaeology programs needs to be a central part of the development of our interpretations and the manner in which they are presented.

Hooper, Lisa M. and David Rhode (both, Desert Research Institute, Reno)

[43] **Harvest and Yield Studies of Some Ethnographic Food Plants in the Yucca Mountain Area**

Prince's plume, chia, mentzelia and many other subsistence plants were important resources for the Native American population around Yucca Mountain, Nevada at the time of contact. The Desert Research Institute is conducting harvest and yield studies of some ethnographic food plants in the Yucca Mountain area. These species were harvested and prepared in the traditional manner. This poster will compare the amount of food produced and the time necessary to harvest and prepare the product for consumption, and will also estimate the caloric values of the processed food.

Hopkins, Kenneth D. (Northern Colorado): [70] (see *Haynes, C. Vance*)

Hosler, Dorothy (Massachusetts Institute of Technology)

[21] **The Introduction of Metallurgy to West Mexico: Timing and Teotihuacan**

During the period between 600-800 A.D., metallurgy was introduced to West Mexico; one component from Colombia, the other from southern Ecuador and northern Peru. The first evidence comes from Cerro de Huistle, Tomatlan, Amapa and the Infiernillo sites. The timing of metallurgy's introduction presupposes disruptions or alterations in preexisting exchange systems and items of exchange either within West Mexico, between West Mexico and these more southerly regions or

both. The evidence presented here suggests that the decline of Teotihuacan may provide one of the factors responsible for timing of metallurgy's appearance.

Houk, Brett A. (Texas-Austin) and *M. Kathryn Brown* (Texas-San Antonio)

[13] **Preliminary Report on Investigations at Dos Hombres, Belize**

Dos Hombres is a medium- to large-size Maya site located in northwest Belize. Excavations to date have focused on investigating the four plazas at the site and the surrounding structures. Researchers hope to determine the function of each plaza in order to better understand site planning, site function, and the role of Dos Hombres in the ancient Maya political landscape. This preliminary report will discuss the data collected thus far and the tentative conclusions reached concerning the concepts discussed above, the culture history of Dos Hombres, and the possibility of a regional template for site planning.

Houston, Stephen D. (Brigham Young)

[50] **Feasting, Alliance, and Giftgiving Among the Classic Maya**

Classic Maya political and social organization depended heavily on reciprocal and unilateral giftgiving in objects, food, and drink. This paper examines the dynastic setting, material substance, and theoretical context of such prestation and exchange. New interpretations reveal hieroglyphic expressions for feasting and foods, many to be discussed here.

Howard, Ann V. (Arizona State Historic Preservation Office)

[24] **Arizona's Public Archaeology Program: Promoting Education, Protection, and Interpretation**

Arizona is recognized throughout the nation for having a successful public archaeology program. Public participation in preserving Arizona's past has been, and continues to be, a crucial aspect in the increased awareness and protection of Arizona's cultural resources. The public's role in these endeavors is a major focus of the various components of the state's public archaeology program, one of which is the annual celebration of Arizona Archaeology Awareness Month and its associated Archaeology Fair. This paper will discuss the role of volunteers in this outreach program, as well as the successes, the problems, and the goals for the celebration.

Howard, Jerry B. (Mesa Southwest Museum)

[93] **Agricultural Strategies in Hohokam Irrigation Agriculture**

The Hohokam irrigation agriculturalists of the Sonoran Desert adapted a unique agricultural strategy that utilized large and labor-intensive irrigation networks. New information concerning the engineering and operation of these complex systems is presented. Paleohydraulic reconstructions are used to evaluate channel design, measure system capacity and examine water flow characteristics. The modification of channel design approaches to accommodate local topographic conditions is discussed. A computer simulation of crop production and storage potential are used to evaluate agricultural risks and explore questions relevant to the Hohokam collapse.

Howard, Virginia (California-Los Angeles)

[133] **Steatite Vessels: Issues of Production, Trade, and Control on Santa Catalina Island**

The evolution of steatite vessel crafting on Catalina Island constitutes one of the most significant economic developments in the Southern California Bight in the Late Prehistoric Period. While long recognized as important components of sites on the mainland and the island, a systematic regional approach documenting vessel production and trade was absent. Cross-channel trade of these vessels illustrate unexpected patterns of economic interaction with coastal populations. Investigation of the areal extent, material selection, and stages of vessel production offer insights into the extent and organization of production; providing implications for economic control on the island.

Huber, Edgar K. (Washington State)

[118] **The Architectural Expression of Prehistoric Puebloan Social Complexity in the Upland Southwest.**

As compared with nonelite households, elite residential architecture tends to show greater labor investment, especially in aspects symbolizing status and social meaning. Thirteenth century Mesa Verde Pueblo architectural complexes in southwestern Colorado compared to determine if there was evidence of elite households. Variation in relative construction effort, masonry selection and uniformity and shaping of stones suggests a moderate level of social or functional differentiation among residential units, but the presence of a residential elite is not supported.

Huckell, Bruce B. (Maxwell Museum of Anthropology) and *C. Vance Haynes, Jr.* (Arizona)

[126] **The Ventana Complex: New Dates and New Ideas on its Place in Early Holocene Western Prehistory**

The 1941-1942 excavation of Ventana Cave in southwestern Arizona revealed an indurated deposit,

the Volcanic Debris Layer, containing artifacts and bones of extinct animals. The stone tool assemblage, defined as the Ventana Complex, was subsequently dated to approximately 11,000 B.P. We have augmented the chronometry of this deposit, and reexamined the artifact assemblage. Nine AMS radiocarbon dates suggest that the deposit is probably 8,500-9,500 years old, and that the scraper-dominated flaked stone assemblage resembles other early industries in the western U.S. The implications of these results for understanding early Holocene hunter-gatherers in the arid West are presented.

Hudler, Dale B., Thomas R. Hester, and Harry B. Iceland (all, Texas-Austin)

[37] **Preceramic Settlement at Colha, Belize: The 1994 Investigations**

Two seasons of excavations funded by the National Science Foundation have provided new information on "pre-Maya," preceramic components at the site of Colha, northern Belize. These occupations are linked to initial agriculture at the site, dating between 2500-1500 B.C., around the margins of adjacent Cobweb Swamp. The archaeological remains are stratified below early Middle Preclassic activities at the site. Distinctive tools, known as constricted unifaces, were made and used by these early peoples. Field and laboratory research in 1994 have better defined preceramic settlement and technology.

Huff, Dawn L. (Georgia State)

[129] **Analysis of Faunal Remains and Site Formation Processes: Medical College of Georgia**

Renovation of the original building of the Medical College of Georgia in 1989 exposed human remains that had been illegally procured and used for anatomical study in the nineteenth century. Faunal remains including both wild and domestic species were also found in association with human skeletal material. Analysis of the faunal assemblage indicated the presence of both butchering and dissection marks on the bones suggesting their use for comparative dissection. Preliminary investigation of the site formation processes revealed a unique combination of rodent activities and human behavior in the formation of the Medical College midden. This paper examines nineteenth century dissection practices and offers a new perspective on formation of midden deposits for medical context.

Huffman, Jim and Lanita Van Nimwegen (both, Navajo Nation Archaeology Department)

[67] **Going Outside the Lines: Studying the Effects of Indirect Impacts Along the N16 Road**

There are limited funds available for right-of-way archaeology, and these monies are best spent on sites in immediate danger of destruction. But we cannot ignore the indirect impacts to sites outside of rights-of-way, both during and after road work is completed. The Navajo Nation Archaeology Department has developed a proposal to monitor and mitigate the effects of indirect impacts along Navajo Route 16, a road construction project that will "open up" a remote and archaeologically rich portion of the reservation. This is an innovative, cost-effective program that relies on community involvement, giving local Navajo residents a direct stake in the preservation of their cultural heritage.

Hufnagle, John (Southern Methodist)

[30] **Teasing More Information out of Tree-Ring Dates to Better Understand Aggregation.**

To better understand the process of aggregation in the American Southwest, the construction sequence at important sites must be understood. In her cornerstone 1991 study, Crown evaluated the construction sequence at Pot Creek Pueblo, a multicomponent northern Rio Grande site dating between A.D. 1250 and 1325. Using new data, we now know more about when people built their homes in that community. The new data include an estimate of a range of probable cutting dates from tree-ring specimens that lack the standard characteristics necessary to know the true cutting dates (i.e., "vv" noncutting dates).

Hughbanks, Paul J. (Tulane), *Pamela J. Buttes* (Texas-Austin), and *Jennifer Lundal* (California-Los Angeles)

[13] **Landscape Modification and Community at Guijarral, Belize**

Existing data from the Maya Lowlands have recently been interpreted to indicate that the availability of water may have partially dictated the organization of ancient Maya settlements. The more encompassing role undertaken by Maya elites in the control of resources, i.e., land, water, trade, etc. and the development of civilization are examined from the perspective of rural settlement in NW Belize. In this vein are here examined the intra-site relationships between land, water, and social organization at the Lowland Maya site of Guijarral, an ancient rural village of Maya civilization.

Hughes, Richard E. (Geochemical Research Laboratory)

[123] **Issues of Reliability, Validity, and Scale in Obsidian Sourcing Research**

Obsidian provenance analysis depends explicitly on the reliability and replicability of measurement units, but early concerns for these issues were largely implicit. It has become clear, however, that

measurement units appropriate for one scale of analysis (a local area) may fail to provide valid measures when the scale and scope of research is expanded to a larger spatial universe (a region). This paper explores some aspects of the relationship between reliability and validity at varying spatial scales, and considers how geologic and geochemical factors impinge on conclusions archaeologists draw from sourcing studies.

Humpf, Dorothy A. (Pennsylvania Bureau for Historic Preservation)
[108] **An Alternative Approach to Mitigation: Public Archaeology and Data Recovery Excavations on City Island, Harrisburg, PA**

During data recovery excavations at the site of the proposed Pennsylvania Sports Hall of Fame, it was found that significant archaeological remains also extended into the area to be disturbed by a parking garage. This area was not included in the current mitigation plan and involved disturbance in the form of 24 concrete columns to support the elevated structure. To facilitate the issuance of state permits and the maintenance of the construction schedule, the PASHPO and the City of Harrisburg agreed to allow garage construction to proceed while SHPO archaeologists conducted data recovery excavation and public tours under the elevated structure.

Hunt, Chris O. (University of Huddersfield, England): [76] (see *Donahue, Randolph E.*)

Hunt, Tim (Washington): [10] (see *Madsen, Mark*); [22] (see *Lipo, Carl*)

Hunt, Tim, Mark Madsen, and Carl Lipo (all, Washington)
[72] **Examining Cultural Transmission Using Frequency Seriation**

Seriation is commonly used to chronologically order assemblages. However, when derived from a robust theory of cultural transmission, seriation becomes a general tool for exploring degrees of interaction between individuals and groups. A network model of transmission allows us to generate records of stylistic change with varying spatial and temporal patterning. By comparing simulated and actual archaeological assemblages we examine the degree to which the assumptions of seriation are met and how deviations from these assumptions inform about the underlying structure of transmission. Spatial structure, cultural lineages, and assemblage duration are investigated using a theoretically informed seriation method.

Hunter, Andrea A. (Northern Arizona), **Michael P. Eastman** (Northern Arizona), **Sheri A. Maktima** (Northern Arizona), **Beth A. Reichle** (Emory), and **Bernadette C. Slater** (Northern Arizona)

[136] **Electron Spin Resonance (ESR) Spectroscopy Applications in Paleoethnobotany**
Electron spin resonance (ESR) spectroscopy is currently being used to explore thermal histories of archaeological seeds recovered from human coprolites. This technique is being applied in a study of coprolite macroremains recovered from Southwest archaeological sites. ESR experiments conducted on modern seeds prepared by a variety of food processing methods were compared with ESR signals from archaeological specimens. Distinct signals were obtained from modern specimens and matched with archaeological signals. Experiments indicate that ESR *g*-value, line width, spin intensity, and line shape are useful parameters which identify maximum temperature and duration of heating associated with differential food processing methods.

Hurley, William M. and Bing Wang (both, Toronto)
[77] **Data Banks and the Japanese Ceramic Shiki Concept**

The Jomon Cultural Tradition with its distinctive ceramics is one of the world's oldest and longest Neolithic manifestations. Jomon means string, cord, knots, nets, etc., and based on the type of decoration, its location and vessel shape, ceramics grouped into *shikis* are what Peter Bleed describes as unique ceramic attributes which are typical of it. However variations within a *shiki* cannot be specifically described and any links can only be dealt with in general terms. Our research on the Hokkaido Yagi site ceramics attempts to rectify and clarify specific similarities and differences and temporal subdivisions.

Hurst, W. Jeff (Hershey Foods Technical Center), **Robert A. Martin, Jr.**, and **Stanley M. Tarka, Jr.**

[64] **Analytical Studies on Samples from Rio Azul Tomb 19**

A series of analytical studies were on samples obtained from Rio Azul Tomb 19 to determine their composition. Since there was an indication that these samples might be cocoa, the investigations focused on the determination of theobromine and caffeine. Using HPLC with photodiode array (PDA) and mass spectrometry (MS) detection, we determined that several of these samples contained these compounds which gave a positive indication of cocoa. Additional studies focused on the determination of amino acids, lipids, and colored materials.

Hyland, David C. (Gannon) and **J. M. Adovasio** (Mercyhurst)

[30] **Perishable Industries From Pendejo Cave, New Mexico**

Over 450 perishable artifacts were recovered from the 1990-1993 excavations at Pendejo Cave (FB9366), New Mexico. The assemblage includes cordage, basketry, sandals, and miscellaneous fiber constructions. Indirectly dating to 11,300±110 B.P. (UCR-2602), specimens from the Paleoindian levels are among the oldest perishables recovered from the Greater American Southwest. Levels attributed to the Archaic and early Formative periods—times for which there has been scarce recovery of perishables from eastern New Mexico—yielded an important new corpus of perishables data. The artifacts are described in terms of technological process and product, correlations are made with coeval assemblages from elsewhere in the Arid West, and the data are discussed vis-à-vis the Archaic antecedents of the Jornada Mogollon.

Hyland, Justin R. (California-Berkeley)

[17] **Rock Art and the Hunter-Gatherer Research Agenda**

The success of the recent theoretical and methodological reorientation of rock art research largely depends on to what extent it encompasses issues of broader anthropological significance. This reorientation has largely coincided with revisionist discourse taking place within hunter-gatherer studies in general, in which entrenched assumptions of hunter-gatherer egalitarianism, simplicity and stasis have been problematized and new formulations proposed. With important exceptions, however, the participation of rock art research in this discourse is far from fully realized. Specifically, it is argued that hunter-gatherer rock art comprises a crucial body of evidence bearing on broad issues of variability and change in hunter-gatherer social formations.

Hyman, Marian (Texas A & M): [17] (see *Rowe, Marvin W.*)

Iannone, Gyles (University of London)

[37] **An Assemblage of Ancient Maya Ritual Enema Paraphernalia from Zubin, Cayo District, Belize**

Recent excavations at the ancient Maya "minor center" of Zubin, Belize, have uncovered an Early Classic (300-600 A.D.) assemblage of grave goods both functionally and iconographically linked to the hallucinogenic enema ritual so often depicted on Late Classic (600-900 A.D.) ceramic vessels. This context not only provides us with one of the few archaeological assemblages of ritual enema paraphernalia, but also suggests that this method of vision questing was, from an early time, not confined to the upper sociopolitical stratum of ancient Maya society.

Iceland, Harry B. (Texas-Austin)

[66] **Preliminary Analysis of the Lithic Artifacts from Tetimpa, Puebla**

Preliminary analysis of the lithic artifacts from Tetimpa focuses on the considerable variety of tool types and production processes evident in this small collection. Analysis of the intrasite distribution of this lithic material in relation to structures, features, and other artifacts in combination with use-wear and residue studies, appears to provide an unusual opportunity to consider tool functions in a variety of household subsistence and craft activities. XRF testing of a sizeable sample of obsidian artifacts is providing data on sources exploited and possible exchange networks.
[37] (see *Hudler, Dale B.*)

Idol, Bruce and J. Ned Woodall (both, Wake Forest)

[129] **Late Woodland and Lamar in Northwestern North Carolina: Archaeological Correlates of an Ethnographic Fuzzy Set**

The upper Yadkin River valley (North Carolina) presents an opportunity to study the social interaction between cultures labeled broadly as Late Woodland and South Appalachian Mississippian, or Lamar. Investigations conducted in this area by Wake Forest University have focused on the nature of social interaction between areas traditionally bounded by conventional archaeological terminology. Our goal is to provide a more realistic version of how societies were arranged and organized. The concept of the "fuzzy set" as used in ethnography is more useful than phase designations in marking this area of social relations.

Ilett, Michael J. (Université de Paris I): [81] (see *Demoule, Jean-Paul*)

Inomata, Takeshi (Vanderbilt)

[52] **Population Estimate for the Classic Maya Lowlands: New Data from Aguateca, Guatemala**

Although our knowledge of lowland Classic Maya settlement patterns has increased considerably, the question of how to convert structure counts into population figures remains unsolved. Excavations at Aguateca, Guatemala, revealed rapidly abandoned structures with rich assemblages of in situ artifacts, providing important data with which to assess the number of individuals per

household and the percentage of nonresidential structures. Evidence suggests a lower population figure than previously expected.

Irish, Joel D. and John W. Hohmann (Louis Berger & Associates)

[43] **Reliability of Three Remote Sensing Techniques at Old Las Vegas Mormon Fort State Park**

Two independent remote sensing surveys, using magnetometry, ground penetrating radar, and soils resistivity, were conducted at the Old Las Vegas Fort site in Las Vegas, Nevada. One survey was conducted after the removal of over one meter of sterile overburden. The Mormons operated a mission at the site from 1855 to 1857. Several structures were later built on Fort foundations, and the site was continuously occupied until 1955. Both surveys were followed by archaeological subsurface testing, which resulted in a methodological study that tested the reliability of remote sensing techniques in predicting the presence of buried archaeological features under varying field conditions.

Isbell, William H. (SUNY-Binghamton)

[65] **Iwawi: Adaptive Evolution or Resistance to Hegemony**

Does Iwawi possess a Tiwanaku III component that participated in regular evolutionary formation of a vast state, or does it reveal a complex and conflicted struggle by local peoples to resist hegemonic pressures? Does subsequent popularity of Tiwanaku symbols represent adaptive administration by state bureaucrats or the imposition of external control by aggressive foreign elites? These alternatives represent a larger question. Has viewing regional cultures as local evolutionary antecedents of classic Tiwanaku contributed to an assumption about the inevitability of state evolution and hidden people, conflict, and variability in early Bolivian prehistory?

Iseminger, Bill (Cahokia Mounds Historic Site) and *John Kelly* (St. Louis)

[18] **The Cahokia Palisade: Partitioning the Sacred Precinct**

The extensive palisade that surrounds the central precinct at Cahokia is a relatively late construction. Its sudden erection resulted in a number of changes within Cahokia's overall configuration, particularly the positioning of the site's peripheral plazas. The palisade, in effect, represents a major discontinuity indicative of social and political changes occurring within the American Bottom as well as outside, as other political entities were emerging. As an alternative model to the prevailing view of cultural decline, this paper will examine Cahokia as a rejuvenated Mississippian center more in line with coeval Mississippian societies to the south.

Jackson, Douglas K. (Illinois-Urbana/Champaign) (see also *Emerson, Thomas E.*)

[59] **Variation Within the Late Woodland Period in the American Bottom**

The Late Woodland period in the American Bottom is currently defined as encompassing a temporal span of approximately 500 years. In general, cultural developments in the American Bottom mirror those found elsewhere in the Midwest. The three American Bottom Late Woodland phases have undergone slight refinements since their original definition in the early 1980s. This paper highlights differences observed between the phases in such areas as population size, settlement pattern and technology.

Jackson, Lawrence J. (Northeastern Archaeology Assoc.) and *Christopher J. Ellis* (Western Ontario)

[87] **Geomorphology, Geochronology, and Great Lakes Paleoindians: Crossing the Space/Time Barriers**

Geographical investigations have played a significant role in the development of Great Lake Paleoindian studies. This paper examines the nature of Early Paleoindian relationships to a variety of Late Pleistocene geological features, including the proglacial Great Lakes. Chronological and environmental implications are considered in the light of recent new discoveries.

Jacobson, George L. (Maine)

[36] **Spatial and Temporal Variability in Late-Glacial Vegetation of the Great Lakes—New England Region**

Landscapes of the Great Lakes—New England region changed rapidly and differentially with the demise of the Laurentide ice sheet. Paleovegetational reconstructions using mapped pollen data reveal strong differences from east to west throughout the period from 14,000 to 9000 B.P., with open tundra-like conditions and spruce woodland persisting latest in northern New England and the Maritime provinces. Spruce forests and woodlands were important across the region as late as 9500 B.P. Pine became abundant in New England by 12,000 B.P., spreading westward coincident with the expansion of birch after 11,000 B.P.

Jahren, Hope and Ron Amundson (both, California-Berkeley)

[131] **Determining Climate from Hackberry Phytoliths**

The endocarp of the Hackberry (*Celtis*) fruit contains phytoliths which are composed of the minerals aragonite and opal and are commonly found in Quaternary sediments. The unique mineralogy of Hackberry phytoliths admits the possibility of paleoclimate reconstruction through chemical analyses. We have pursued this in several ways: through controlled field studies on modern trees, and through morphological and chemical analyses of large sets of both modern and fossil Hackberry endocarps. We present here a summary of these endeavors, stressing our assessment of the use of Hackberry endocarp phytoliths from archaeological sites for climate indication of the environment of past peoples.

James, Dennis (Texas A & M): [92] (see *Brewington, Robbie L.*)

James, Steven R. (Arizona State)

[78] **Prehistoric Pueblo Households and Social Organization: New Perspectives for Model Building**

Social organizational variability observed in the pueblo ethnographic record is examined for ascertaining the composition of prehistoric pueblo households. Problems with the static late 19th century view of ethnographic pueblos used for interpretations of the past are first examined. From the revised ethnographic models, differences in several key factors (e.g., mean room size, corn processing and storage facilities, and types of ceremonial rooms) are proposed to account for regional variation in prehistoric households across the Southwest and are tested with quantifiable data from 350 sites. Causal factors proposed to explain these regional differences include division of labor by gender and type of warfare.

Jansen, Henrik M. (Svendborg County Museum)

[27] **Ships, Trade, and Towns in Viking Age Denmark**

It is a tradition to let the Viking Age in Denmark begin about 800 A.D. Research with the last decade shows, however, that the structure of the society, such as we know it, already took form during the first centuries A.D., such as establishing marketplaces and large centers of power with great activity in the craft area. At the same time there was an interesting development of types of vessels which were, however, primarily made for transport of warriors and luxuries. About 700 A.D. real urbanization based on royal authority is seen in Ribe together with the first Danish coinage. Consequently, we will let the Viking Age start 700 A.D. and let it last until the end of the 11th century.

Janusek, John Wayne (Chicago)

[11] **Local Ceremony and Segmentary Politics in Tiwanaku Urban Centers**

Drawing on extensive archaeological excavations, this paper examines the dynamic interaction of state and local groups (residential and regional) in two Tiwanaku urban centers. Rather than rigidly bounded social entities, local ethnic groups and ayllus in Tiwanaku were fluid organizations with specific contexts for group identification and mobilization, and ultimately, for social power. I compare diverse residential contexts at Tiwanaku and Lukurmata to illustrate the intricate and dynamic nature of Tiwanaku sociopolitical organization, and argue that diverse forms of ritual provided potent contexts for expressing social differentiation and engaging in local politics.

[65] (see *Alconini, Sonia*)

Jefferies, Richard W. (Kentucky)

[18] **Mississippian Adaptation on the Northern Periphery: Settlement, Subsistence, and Interaction in the Cumberland Valley of Southeastern Kentucky**

Three years of research in the Upper Cumberland Valley of southeastern Kentucky are providing significant new insights on Mississippian settlement patterning, subsistence strategies, technology, and regional exchange and interaction. This paper presents an overview of Mississippian adaptation in the Upper Cumberland region and summarizes the results of investigations at the Croley-Evans town and mound complex located in Knox County, Kentucky. Adaptive strategies of Upper Cumberland Mississippian groups are then compared with those of other Late Prehistoric groups that inhabited adjacent portions of the southeastern and midwestern United States.

[59] Discussant

Jenkins, Leigh (Hopi Tribe): [48] Discussant

Jennings, Richard P. (University of Auckland): [69] (see *Ladefoged, Thagn*)

Jeske, Robert J. (Indiana-Purdue at Fort Wayne) (see also *Kuznar, Lawrence A.*)

[33] **Microwear Analysis of Lithic Artifacts from the LaSalle County Home Site (11LS14).**

Test excavations at the LaSalle County Home Site (11LS14) on the Upper Illinois River revealed a possible Mississippian house floor and associated debris. A sample of stone tools from the suspected house were examined using both low power and high power microscopy to determine if any spatial patterning of activities was discernable. Raw material class and other attributes were also studied in an overall analysis of the lithic assemblage. This analysis helps to clarify the role of lithic economy in the overall economy of Mississippian occupants of the Upper Illinois Valley.

Joaquin, Angelo J. (Native Seeds/SEARCH)

[93] **Flood-Water Farming Practices of the Tohono O'odham**
I will discuss Native American farming as it is practiced in my community. The Tohono O'odham (Desert People) living in the Sonoran Desert of southern Arizona, supplemented the native plants collected for food with crops grown only with rainwater. These traditional farmers, diverting floodwater from an entire watershed, successfully raised crops in an extremely arid region.

Jochim, Michael (California-Santa Barbara)

[117] **The Transition to Agriculture in Central Europe**
The traditional model of agricultural origins in Europe that emphasized population immigration and replacement has been seriously reevaluated in many parts of the continent in light of growing evidence of contributions by local populations. In central Europe, however, the traditional model has remained the dominant interpretation. Recent work, however, suggests that this model is, at the very least, too simplistic. This recent work will be discussed.
[103] Discussant

Jodry, Margaret (American): [9] (see *Stanford, Dennis*)

Johnson, Byron (WCRM): [126] (see *Towner, Ronald H.*)

Johnson, Craig M. (BRW, Inc.) (see also *Ahler, Stanley*)

[110] **Plains Village Settlement Patterns in the Middle Missouri Subarea**
This paper provides a brief history of the Plains Village occupations along the Missouri River in the Dakotas. Evidence from the earliest occupations (A.D. 1000-1500) suggests low population densities, on the order of two to four contemporaneous villages/region. The period from A.D. 1500-1600/1650 is characterized by dispersed settlements and the beginnings of nucleated communities, perhaps reflecting different responses to epidemic diseases. During the protohistoric period (A.D. 1600/1650-1800), some villages are compact and fortified, while others remain unfortified. These changing settlement patterns have implications for locational analyses.

Johnson, Eileen (Texas Tech)

[9] **Southern High Plains Paleoindian Subsistence Patterns**
Lubbock Lake, southern High Plains of Texas, contains a series of Paleoindian subsistence activity areas within well-stratified deposits that span the late Pleistocene to early Holocene. Hunting is the primary activity preserved in the record, with two major patterns that indicate different subsistence bases. The late Pleistocene pattern is that of a broad spectrum, meat-related subsistence base involving a variety of large game animals. The early Holocene pattern is that of a focused, meat-related subsistence base involving one large game animal but a variety of small-animal resources. These differing subsistence bases are used to infer changing social organization.

Johnson, Gerald H. (William & Mary), **Joseph M. McAvoy** (Archaeological Society of Virginia), **M. Scott Marris** (Delaware), and **Kevin Jones** (William & Mary)

[87] **Geology of the Cactus Hill Archaeological Site (44SX202) Sussex County, Virginia**
Cactus Hill has yielded cultural material dating to about 11,000 years B.P. The artifacts occur in the upper .7 m of an approximately 2.0 m thick stratified aeolian sand that mantles east-west trending ridges and swales. The site lies on the east bank of the entrenched (4 to 5 m), north-flowing Nottoway River. The fine to medium quartzose sand rests on a paleosol formed on an undulatory Pleistocene landscape. The grain size of the sand decreases and the sorting, frosting and roundness increases away from the river. Aeolian activity apparently began about 30,000 years B.P. and by 11,000 provided a well-drained substrate for early inhabitants of the area.

Johnson, Ian (University of Sydney, Australia) and **Margrit Koettig**
[47] **Hunting for Pattern in Lithic Waste: A Comparison Between Multivariate Methods and In-Depth Analysis Through Refitting**

Using 26 refitted assemblages from the Hunter Valley (Australia), we test statistical approaches to the analysis of lithic waste against detailed knowledge of the reduction sequences and established reduction strategies. These samples provide a controlled environment to assess the effectiveness of different methods. Lithic reduction generates a shifting, cyclical point cloud in multivariate space.

These data are not particularly amenable to typological classification, nor can the structure be adequately captured by comparison of individual variables or ratios, or by summary statistics. Our paper aims to classify the assemblages directly in relation to point cloud structure and identify a reduced attribute set adequate for this purpose.

Johnson, Ian (University of Sydney, Australia)

[72] **Quantitative Methods and Computers in Archaeology—A Set of Teaching Modules**
The poster presents a set of teaching modules developed to introduce undergraduates to quantitative methods and the use of computers in archaeology. Modules are designed as complete packages including a teacher's manual, student workbooks and test datasets. A hypertext information base provides background information, explanations, examples and bibliographic references for each topic. Modules developed so far: an overview of quantitative methods in archaeology; introduction to computers and basic computer skills; data recording and databases; basic sampling, descriptive statistics and graphics; linking graphical and attribute data. The modules use a problem-solving approach applied to real data to encourage student involvement.

Johnson, Jessica S. (Texas Memorial Museum)

[68] **Conservation of Archaeological Bone**
Excavated bone can be fragile and recovery may require measures to ensure preservation of morphological structure. "Preservatives" are commonly used, but other techniques such as exterior supports or slow drying have also been successful. This paper will examine pros and cons of various techniques used for lifting fragile bone. It will also discuss the properties of and problems with many of the preservations being used at present. There is no panacea polymer or technique to ensure preservation of all the data contained within archaeological bone, but considered alternatives will allow for better preservation of the physical and chemical structure.

Johnson, Kerstine

[54] **Archaeology in the 21st Century: The Critical Role of Public Relations**
Solid public relations outreach activities will become a necessary element for archaeological endeavors in the ensuing decades. Archaeology must recognize the value of implementing public relations strategies and tactics. Through heightened public support, awareness and appreciation, we can expect an increased demand for environmental laws; greater protection of sites; improved public education and involvement; and more effective fund-raising efforts. This paper will propose targeted public relations techniques that may be employed so as to promote the success of archaeology.

Johnson, Lucy Lewis, Kathryn Leonard, and Alexandra Chan (all, Vassar)

[133] **Salmon Fishing at Squaw Harbor: Resistivity and Net Weights**
On Unga Island in the Shumagin Islands, southwest Alaska, two sites flank a salmon stream. Most local sites show patterns of house pits surrounded by anthropogenic vegetation. These two sites have two house pits with large adjacent areas of anthropogenic vegetation. In 1989, Johnson hypothesized they represented summer fishing camps with small year-round settlement. In 1994, we mapped and resistivity surveyed one site. We test excavated a trench across an area which showed variation in its resistivity readings. This trench 1) demonstrated that high resistivity indicated large rocks close below the surface, and 2) revealed a concentration of stone net weights, supporting the hypothesis of a fishing camp.

Johnston, Kevin (Minnesota)

[34] **Political Power and the Structure of Writing: Dominance, Persuasion, and Recording in Mesoamerican Complex Societies**

In Aztec, Zapotec, Mixtec, and Maya societies an inverse relationship existed between the centralization of political power and the morphological elaboration of writing systems, which is defined in terms of the documentation of spoken language. Surprisingly, the Aztec pictorial writing, which served a highly centralized, authoritarian empire, was one of the region's least elaborate systems, while the Maya phonetic system, employed by poorly centralized, unstable states, was the most elaborate. This relationship between power and writing morphology contradicts the expectations of most historians of writing. As this paper demonstrates, the social requirements of political systems structured not only the content but the morphology of early Mesoamerican writing systems.

Jones, Deborah L. (Arizona State)

[56] **Production and Exchange of Glaze-Decorated Ceramics at Quarai Pueblo, New Mexico**
This paper addresses the scale of production and exchange of glaze-decorated ceramics manufactured from A.D. 1520-1670 at Quarai Pueblo. Electron microprobe analysis of glaze composition, examination of glaze physical properties, and coding of surface decoration are used to identify the number of glaze production strategies represented in ceramics produced at Quarai. These ceramics are then compared with glaze-decorated wares produced at Quarai and exchanged to Gran Quivira,

a contemporaneous Rio Grande pueblo, in order to determine what proportion of the total Quarai potting population was involved in intraregional ceramic exchange.

Jones, Kevin (William & Mary): [87] (see *Johnson, Gerald H.*)

Jordan, James W. (Wisconsin-Madison): [100] (see *Maschner, Herbert D. G.*)

Joseph, J. W. (New South Associates)
[115] **Los Caficultores de Maraguez: A Social and Technological History of Coffee Processing in the Cerrillos Valley, Municipio Ponce, Puerto Rico**

This paper examines the history, technology, and society of coffee agriculture and manufacture in the Cerrillos Valley of Puerto Rico. Drawing from archaeology, archival history, oral history, architectural history, and landscape studies, it examines the ways in which social structure and technological organization were reflected in the material culture of coffee farms and processing sites. This paper reviews the technology of coffee processing and the culture of coffee agriculture in Puerto Rico.

Joyce, Arthur A. (Vanderbilt): [82] (see *Mueller, Raymond G.*)

Juan, Jordi: [131] (see *Albert, Rosa Maria*)

Judkins, Constance K. (Texas A & M)
[92] **A Missing Piece: Endemic Disease Among the Mimbres**

Understanding the health of a population is necessary for development of meaningful models of adaptation; changes in environment, settlement pattern and diet, conditions which may be influenced by political and economic factors, affect morbidity and mortality rates. Use of disease as a measure of stress among the Mimbres is limited—few data are available. Recent analysis of 44 individuals from Old Town indicate the presence of endemic infection, possibly one of treponemal origin. Although rarely fatal, treponematosiis can reduce fertility and work capacity. The effect of disease among the Mimbres warrants further consideration.

Junker, Laura (Vanderbilt): [50] Discussant

Justin, Michael A. and *Robert G. Thompson* (both, Woodward-Clyde Consultants)
[120] **Fine-Screen Recovery of Faunal and Lithic Material at a Multi-Component Woodland Habitation**

The Roosevelt Lake Narrows Site, in Cass County, Minnesota, is a multi-component Woodland habitation. Located on a lake shore, the site was expected to yield abundant fish remains. However, only a few vertebrae were recovered in ¼" screening. Using fine mesh window screen substantially more fish bone was recovered. This fine screening technique unexpectedly yielded more than twenty obsidian flakes smaller than ¼" diameter. In the ¼" screen, only two obsidian flakes were recovered. Using fine screening techniques at Roosevelt Lake Narrows therefore, demonstrated the bias inherent in ¼" screening methods in recovery of certain classes of artifacts.

Kaiser, Timothy (Royal Ontario Museum) and *Staso Forenbaher* (Southern Methodist)

[76] **Palagruža and the Early Bronze Age of the Adriatic**
The Adriatic is sometimes stigmatized as a backwater in the prehistory of the Mediterranean. Recent research shows that this was not the case. Survey and excavation on the island of Palagruža and neighboring islands in the central Adriatic suggest that the Mediterranean world system had a precursor there by 2000 B.C. as Dalmatian and Italian groups began to exploit the navigational possibilities afforded by these islands and to use their resources. The Mediterranean world owes its development in no small part to the maritime connections forged by its sailors, connections which are apparent early in the Adriatic.

Kaldahl, Eric (Arizona)
[30] **Chipped Stone Assemblages in a Lithic Rich Environment: Functional and Social Organizational Impacts on Technology**

Lithic raw material variety and abundance reveals the technological utility of different source materials from twenty chipped stone surface collections in the Silver Creek area of east-central Arizona, from sites dating between the 9th and 14th centuries. A rich raw material environment obviates distance-from-source constraints, freeing debitage analysis from traditional spatial interpretations regarding the intensity of reduction. Rather, the intensity of reduction and the frequency of distinct material types in each assemblage reflects the impact of social organization, community size, exchange and subsistence variation on the organization of chipped stone technology.

Kaldenberg, Russell L., and *Donald Manuel* (both, Bureau of Land Management)

[132] **What do We Tell the Teachers? What do the Children Learn? Approaching the Community with Archaeological Data Carefully and Cautiously**

The primary focus of BLM's cultural resource management program in northeast California is compliance with legislative mandates. Recently, the bureau has moved beyond compliance to working with local schools to bring archaeology alive. This paper discusses approaches to education that are working locally and suggest some trends that might be applicable universally.

Kalogirou, Ada (Cincinnati)

[119] **Greek Neolithic "Cheese Pots": A Reevaluation of the Evidence**

Neolithic pots with many perforations, found from Central Europe to the Near East, have been labeled "strainers," "sieves," and "cheese pots," and interpreted in the framework of the "secondary products revolution." This paper focuses on perforated pots excavated from Greek Neolithic sites of the late 5th and 4th millennia B.C. Examination of the individual characteristics of the pots demonstrates that they are a highly diversified group. It is concluded that their presumed function as "cheese pots" is unsubstantiated. This conclusion finds further support from faunal evidence available from Neolithic Greece.

Kantner, John (California-Santa Barbara)

[111] **Political Competition Among the Chaco Anasazi of the Southern San Juan Basin**

An actor-based model of political competition is proposed to explain the development of the Chaco Anasazi of the American Southwest. This model is derived from Neo-Darwinian theory and methodological individualism, and focuses on the transition from egalitarian societies to those exhibiting coercive forms of leadership. The importance of the physical and social context for structuring individual decision making is emphasized. The model is evaluated through analysis of Chacoan communities in a portion of New Mexico's southern San Juan Basin. The study suggests that political competition between aspiring leaders contributed to the evolution of the Chaco Anasazi.

Kantor, Loni M.

[21] **Lithic Specialization and the Growth of La Quemada**

Archaeologists often expect that polities exhibiting social ranking and economic stratification utilize specialization of production to create and sustain social inequality. Given that La Quemada was an elite residential center of monumental character, it is expected that economic specialization developed over the course of its growth between A.D. 550 and A.D. 850. Chipped stone materials have been examined for the purpose of evaluating changing degrees of specialization occurring in the production of stone tools. Results indicate that, although some degree of economic specialization probably occurred at La Quemada, such specialization did not extend into stone tool production.

Kaplan, Lawrence (Massachusetts)

[82] **Phaseolus Beans, Accelerator Dates in the Americas**

AMS dates are being determined for four bean (*Phaseolus*) species from sites in Mexico and South America. A number of dates including some often cited, are substantially more recent than previously estimated by indirect means. A set of more than 30 dates is presented and discussed with reference to the development of prehistoric agriculture and centers of origin for the domestication of American bean species.

Kardulias, P. Nick (Kenyon)

[31] **Stone Tools in Ancient Greece: Local Production, Technological Traditions, and Regional Economics**

Contrary to conventional thinking, the use of flaked stone tools did not cease with the advent of metal implements in the Aegean area. Recent work at two major sites in Greece (Isthmia and Haliëis) provides an important comparative base to investigate this matter. Morphological study indicates that a variety of tools served numerous functions in domestic, agricultural, and ritual contexts. The analysis sheds light on a small but significant part of the economy of Classical society. Part-time specialists continued to produce an array of lithic implements that were an affordable alternative to metal tools.

[31] (see *Yerkes, Richard W.*)

Katzenberg, Anne (Calgary)

[19] **Skeletal Evidence for Anasazi Violence in Southwestern Colorado**

Biological evidence, in the form of perimortem trauma to the skeleton, and cultural evidence, in the form of burial context, indicate that interpersonal conflict was a factor in later Anasazi life. Two sites in southwestern Colorado, Sand Canyon Pueblo and Castle Rock provide such evidence. At Sand Canyon, there is a contrast between intentional burials, where people are placed in a flexed position, often with grave goods, and probable homicides, where there is perimortem trauma and

lack of intentional placement of burials. At Castle Rock, burials are commingled and largely incomplete with perimortem trauma and postmortem scatter, partly from scavenging carnivores.

Kay, Marvin (Arkansas)

[110] **Middle Missouri Subarea Fortifications and Warfare**

The Crow Creek massacre is useful in identifying the most desired sequence of fortification construction, and the status of village fortification compared to other evidence (the burning of a village, scalping, mass burials, etc.) of warfare. These criteria allow warfare to be recognized as a major social regulatory mechanism. Warfare led to the separation of Coalescent and Middle Missouri traditions populations, the maintenance of buffer zones and defensive outlier villages, much as Lehmer predicted. It became more frequent as populations increased and environment and climate deteriorated between the 11th and 15th centuries.

Kealhofer, Lisa (William and Mary)

[96] **The Holocene Paleoenvironment of Northeastern Thailand: Preliminary Phytolith Evidence from Lake Kumphawapi**

Debates about the context in which rice agriculture developed have a long history in southeast Asia. Only recently has the paleoenvironmental evidence been considered in these discussions. In 1993–1994, paleoenvironmental fieldwork in northeast Thailand, the first phase of a multiregion project, was initiated to resolve some of these issues. This paper will present the preliminary results of a 10,000-year sequence of environmental history based on the phytolith evidence. The cores from the Ban Chiang region provide the longest sequence of environmental changes to date from mainland southeast Asia.

Keeley, Lawrence H. (Illinois-Chicago): [85] (see *Phillips, James L.*); [117] Discussant

Keene, Arthur S. and Elizabeth S. Chilton (both, Massachusetts-Amherst)

[102] **Toward an Archaeology of the Pocumtuck Homeland: Excavations at the Pine Hill Site**
In the 17th century, what is now the town of Deerfield marked the center of the homeland of the Pocumtuck people. The story of the Pocumtuck has been largely a footnote to the history of the English expansion into the Connecticut River Valley. Ethnohistoric representations have been scanty and archaeological sites scarce. Here we report on our efforts to write an archaeology of the Pocumtuck homeland. We describe long-term research at the Pine Hill site—a multicomponent site located at the center of the historic homeland—and summarize new findings on Late Woodland artifact variability, feature function, and subsistence.

Keener, Craig (Ohio State/Ohio Department of Transportation): [14] (see *Butterworth, Kolleen R.*)

Kehoe, Alice B. (Marquette)

[23] **A Resort to Subtler Contrivances**

Veblen remarked that high status and power may be communicated by "a resort to subtler contrivances" rather than ostentation, or subalterns used to display superiors' wealth. Ethnographically, the Blackfoot are an example of a society where power is signified through simple dignity, e.g., the Sun Dance Holy Woman's plain elkskin dress, while young men without much power are flamboyantly ornamented. Some of the finest Plains Indian craftwork may be the work of "third gender" men called to the vocation of craftsworker. Medicine objects such as pipes are themselves powerful, their caretakers constrained to mediative roles. Interpretation must be cautious.

Kelertas, Kristina (California-Los Angeles)

[55] **Prehistoric Crops and Cattle in Thy: Transforming the Staple Base for a Political Economy**

I will demonstrate that crops and cattle were key to the rise of chiefdoms in Thy. Inequalities stemmed from the ability of rising elites to control the production, distribution, and consumption of crops and cattle. During this rise, cattle and perhaps certain crops became not only subsistence foods but items of value as wealth indicators. Based on the examination of 900 macrobotanical samples and faunal evidence, I am reconstructing changing agricultural systems—from small scale but relatively intensive subsistence agriculture in the Late Neolithic, to an extensive and politically oriented system in the Bronze Age.

Keller, Christian (University of Oslo)

[101] **Cognitive Prehistoric Landscape—Theory and Methods**

This paper will address the question of cognitive landscapes. Through visual analysis we have tried to approach the Iron Age landscape of Norway using Iron Age graves together with topographical analyses to establish a picture of the Iron Age attitude toward and organization of the landscape.

Kelly, John E. (St. Louis)

[59] **The Bumpy Road to Mississippian: Late Woodland to Emergent Mississippian Dissonance in the American Bottom**

Numerous investigations over the last half century throughout the American Bottom region have provided sufficient information regarding the foundation upon which Mississippian emerged. While the threads of continuity are often stressed in this elaborate cultural fabric, equally important are those elements that accentuate the breaks in this pattern. This paper will examine those aspects of the Late Woodland–Emergent Mississippian continuum that serve to highlight this dissonance in the cultural landscape prior to Mississippian.

[18] (see *Iseminger, Bill*)

Kelly, Robert L. (Louisville): [103] Discussant

Kendrick, James W. (Southern Methodist)

[111] **Chaco Era (A.D. 1050–1150) Community Structure at Lowry**

Chaco-style great houses are introduced into community settlement patterns in the Mesa Verde area beginning in the mid-11th century. The presence of multiple great houses within a single community (Lowry Community) during the Chaco era challenges models of Chacoan Outlier community structure and organization. Variability within architectural design, composition, and location suggest great houses at Lowry may have served differing functions within the community. These functions may have included, but not limited to, community integration, residence, and exchange. Communities comprised of multiple great houses contrast with single great house communities and indicate organizational variability among Chaco Era communities in the Mesa Verde area.

Kent, Susan (Old Dominion)

[23] **Causes of the Development of Gender Inequality and Loss of Power: Perspectives from the Kalahari**

In order to study gender inequality and the lack of power, it is necessary to understand gender egalitarianism and the presence of political and social power. By examining the role of gender in different types of societies, we can begin to establish when gender inequality and differential access to power may be identifiable in material remains and site structure and when it probably is not. Through the study of different Basarwa (Bushmen) groups in the Kalahari it is possible to examine some of the factors promoting the development of gender inequality and loss of power.

Kepecs, Susan (Wisconsin-Madison), *Sylviane Boucher* (CRY-INAH, Mérida), and *Sherman Banker* (Wisconsin-Madison)

[130] **A Pan-Regional Comparison of Yucatan Slatewares: Approaching the Cepech-Sotuta Problem through Laboratory Analyses**

At mid-century, when the ceramic sequence of Northern Yucatan was established, only a handful of sites had been archaeologically explored. In the last decade, important new investigations have contributed myriad insights into the northern Maya lowlands. One persistent problem that has emerged in the new literature concerns the temporal and spatial placement of the various Yucatan slatewares. It has become clear that these ceramics vary from site to site. More precision is necessary to define the ceramic groups commonly assigned to the Terminal Classic "Cepech" and Early Postclassic "Sotuta" spheres, and criteria must be established for distinguishing pre-Cepech "early slates." Samples of early, Cepech, and Sotuta slates from various sites across the peninsula were submitted to firing temperature experiments and petrographic analyses in an attempt to produce clear-cut information with which to address this problem. The results are presented in this paper.

Keyser, James (Forest Service)

[17] **The Ambrose Ledger: Coup Counting on the Plains/Plateau Periphery**

Plains Indian biographic art spans the Historic period in rock art, hide painting, and ledger art media. Development of a lexicon that enables us to read this art has relied heavily on ledger books best known from Sioux and Cheyenne warriors of the 1870s. The Ambrose ledger, collected about 1840 by DeSmet from the Flathead Chief Five Crows, is one of the earliest ledgers and is key to understanding the development of biographic art and its occurrence among the Flatheads—a more typical Plateau tribe. Study of this ledger has introduced new dimensions to the extent and function of the Plains warfare system.

Kidder, T. R. (Tulane)

[10] **History, Narrative, and the Structure of Archaeological Inquiry**

Processual archaeology, as initially formulated, was contrasted with history, perceived as narrowly focused and particularistic. Historians and philosophers of science, however, investigate two areas of interest: the nature of time and the formulation of general laws of history. This paper explores the relationship between conceptualizations of time and the structure of archaeological inquiry. In

the absence of knowledge about the initial conditions of historic events, it is impossible to explain the results in the context of covering laws. A narrative structure of explanation provides alternative inferences about the initial and later conditions underlying historical patterns. Rethinking the role of historical narrative in archaeology helps us appreciate past practices and modern interpretations.

Kievit, Karen A. (Colorado)

[111] **Building Relationships: Architecture, Ideology, and the Chaco System**

Architecture has been argued to be a readable, material language. Can one read a language without written histories or living people in the cultural landscape to provide clues for relating symbols and meanings? This paper applies the strategies of semiology in a search for the architectural language elements that speak of the relationships of architecture to ideology, and thereby of site to site, in sites of the Chaco System.

Killion, Thomas W. (Smithsonian)

[40] **Olmec Basalt Monument Production in the Southern Tuxtlas Region: Implications for the Growth of Formative Period Society at Laguna de los Cerros, Veracruz, Mexico**

The site of Laguna de los Cerros (LDLC) is located in a volcanic region rich in basalt used to carve the monumental heads, stelae, and other sculptures for which Olmec culture is so well known. Until very recently, virtually nothing was known of the system of production and distribution standing behind these phenomenal pieces of early Mesoamerican art. This paper examines the role of the monumental basalt sculptures as prestige goods in the "political economy" of the Olmec, one of the Mesoamerica's earliest complex societies. Early LDLC capitalized on its strategic position between the basalt and river systems upon which it was moved. Subsistence production and basalt crafting are examined for their variable contribution to the growth of complex society at the site.

Kimball, John F. (ATT): [72] (see *Kimball, Larry R.*)

Kimball, Larry R. (Appalachian State), *John F. Kimball* (ATT), and *Patricia E. Allen* (Appalachian State)

[72] **Atomic Force Microscopy of Microwear Polishes**

The atomic force microscope is used to analyze microwear polishes on experimental flint tools. The goals of this research are: 1) to determine the quantitative parameters of microwear polishes, observed with incident light microscopy (Keeley Method), 2) to evaluate models of polish formation, and 3) to document characteristics of microwear polishes heretofore unobserved. The atomic force microscope is a surface analysis instrument which utilizes van der Waals forces, weak attractive, and repulsive forces between molecules to discern topographic features with a resolution of 1 nanometer. The AFM was used to scan experimental flint tools to create three-dimensional digital images of the polish surface. These digitized images were then quantitatively analyzed. Images of experimental tools were acquired before and after polish formation. The results demonstrate quantitative distinctions among microwear polishes (meat, hide, bone, antler, and wood) and enable new insights into polish formation.

Kimmerle, Erin H. (Hamline): [120] (see *Myster, Susan M. T.*)

King, John M. (York)

[88] **Conflictive Communion: Power, Identity, and Inalienable Possessions in an Anthropology of Maya Caching**

A. Weiner's (1992) concept of "inalienable possessions" is applied to the Maya practice of caching, with a particular focus on the site of Altun Ha. Weiner, a Pacific anthropologist, posits a category of objects which, linked to ancestors and thence the cosmos, become foci of power and identity. This organizing concept coherently integrates diverse strains of anthropology and permits a multi-valent view of caching as symbol, event, object, and as a feature within the larger built landscape.

King, Maureen L. (Washington): [70] (see *Kunz, Michael L.*)

King, Robert E. (Bureau of Land Management)

[132] **Heritage Education in the Far North: A Look at Alaska's Program**

In the early 1900s, the nation's largest land-managing agency, the federal Bureau of Land Management (BLM), inaugurated a far-reaching national program, "Heritage Education." It is designed with the twin goals of using the vast historic and archaeological resources under its jurisdiction to support the education of young Americans, and also of strengthening children's sense of personal responsibility for the stewardship of America's cultural heritage. This paper, using slides, will discuss how this new program is developing in Alaska. This includes special events, teachers' training workshops, educational materials produced for the schools, and more. Also discussed are special adaptations for bringing the program to remote parts of the state.

King, Ron (Nevada-Reno)

[80] **Links Between Archaeology and Integrated Resource Management**

The archaeological record provides special long-term insights into ecosystem composition and evolution. For decades, environmental archaeologists have used the fortunate relationship between cultural and natural systems to build diachronic landscapes and provide insights into past environments. As it eliminates the need to rely on only the most recent information, this is a most significant tool for science-based resource management. Efforts at integrated resource management that ignore the long-term record provided by archaeology will continue to prove lacking and inefficient. Every archaeologist should understand that they are in unique positions to provide crucial elements to integrated resource management.

Kintigh, Keith W. (Arizona State)

[44] **Integrating Public Education with Research**

Considers strategies for integrating public education with a range of research activities. Specific attention is given to means for addressing potential conflict between public education commitments and the research activity required for professional advancement in academic departments.

[111] (see *Mahoney, Nancy*)

Kintz, Theresa (*The Underground*): [74] Participant

Kirch, Patrick V. (California-Berkeley): [96] Discussant

Kirker, Jennifer E. (Pennsylvania State)

[15] **Social Power and Labor Organization in Classic Maya Society: An Architectural Analysis from Copan, Honduras**

This paper examines social power in Classic Maya society as represented in the economic and energetic value of architecture at the ancient Maya site of Copan. The unequal distribution of social power often manifests itself in elite commoner corvee or surplus labor for civic projects. Elite organization and management of commoner labor are viewed here as mechanisms enhancing the social inequality inherent in complex societies. Elite social power will be examined archaeologically in the construction of civic architecture and through distinct differences in the economic and energetic value of architecture between the social groups.

[66] (see *Sheehy, James J.*)

Klassen, Michael A. (Trent)

[39] **From Icon to Narrative: Continuity and Change in the Contact Period Rock Art of Writing-On-Stone, Southern Alberta**

Variation in Writing-On-Stone rock art has often been presumed to be a consequence of ethnic displacements during the contact transition, with significant implications for northwestern Plains history. The examination of external context and internal evidence, however, does not support this hypothesis. Instead, temporal variation in rock art form and content may represent a shift from "iconic" to "narrative" representations during the early contact era, reflecting internal cultural changes corresponding to the transformation from pedestrian to equestrian-based societies. Moreover, underlying continuities in form and content suggest the long-term role of Writing-On-Stone as "sacred landscape" for native groups.

Klatka, Thomas (Roanoke Regional Preservation Office): [14] (see *Klein, Michael J.*)

Klein, Michael J. (Virginia) and *Thomas Klatka* (Roanoke Regional Preservation Office)

[14] **Absolute Seriation, Diagnostic Artifacts, and Feature Chronology: Evaluating Multiple Occupations at the Graham-White Site (44RN21)**

The Graham-White Site occupies a floodplain of the Roanoke River, in Salem, Virginia. The presence of European artifacts demonstrates the existence of a 17th century occupation, while radiocarbon dates suggest both 15th and 17th century occupations. This research attempts to evaluate the temporal duration and relative intensity of Native American occupation through the analysis of spatial variation in attributes of pottery, pipes, projectile points, shell artifacts, metal artifacts, floral and faunal remains, and pit form.

Klesert, Anthony L. (Navajo Nation Archaeology Department)

[35] **Chacoan Communities in Arizona: A Big Picture From CRM Pixels**

A myriad of CRM projects conducted by the Navajo Nation Archaeology Department and others has led to increasing documentation of a well-established Chacoan "interaction sphere" in Arizona, consisting of Chaco-style great houses, great kivas, communities and roads, focusing on the Puerco River Valley and impinging on the Kayenta Anasazi region from the south. As yet incompletely understood, the sites making up this system continue to be documented and interpreted with an eye

toward systemic Anasazi evolution and regional interaction.
[67] (see Benallie, Larry)

Kligmann, Debora M. (University of Buenos Aires): [32] (see Pintar, Elizabeth)

Klima, Bohuslav (Czech Academy of Sciences): [16] (see Adovasio, J. M.); [16] (see Soffer, Olga)

Klippel, Walter E. (Tennessee): [68] (see Bennett, Joanne L.)

Klucas, Eric E. (Arizona)

[12] **Assemblage Diversity and the Use of Space at Tell Al-Raqā'i**
Excavations at Tell al-Raqā'i, an early urban village site in northeastern Syria, have achieved areal exposures in excess of 80% for some architectural levels, providing an excellent opportunity for the investigation of a number of problems often hindered by dependence on small, perhaps nonrepresentative samples. One such area of research concerns the organization of production and use of space. This paper will present the results of an analysis of assemblage diversity through the application Monte Carlo modeling providing important new insight into these issues.

Klucas, Eric E., and Louise M. Senior (both, Arizona)

[58] **Telling Problems in Interpretation of Ceramic Production: Caveats to Interpretation of Craft Specialization from Northern Mesopotamia**

Archaeologists working at Near Eastern "tells" face a number of problems somewhat unique to their situation. These include spatially restricted, perhaps nonrepresentative samples; a traditional concentration on large, "administrative" areas; and surface artifact assemblages that may not accurately reflect subsurface realities. In this paper we will look at how these and related problems may affect one area of research: the investigation of ceramic production and economic specialization. In this paper we discuss how studies of ceramic production as interpreted through Costin's (1991) work may be impacted by the archaeological realities of early urban sites in Northern Mesopotamia.

Kluth, David (Leech Lake Heritage Sites Program), *Rose Kluth* (Leech Lake Heritage Sites Program), and *Robert Thompson*

[45] **The Ogema-Geshik Site: Evidence for Early Wild Rice in the Mississippi Headwaters**
The Ogema-Geshik site is located in northern Minnesota on the Bowstring River. Surface inspection indicates heavy deposits of Brainerd and Blackduck ceramics, as well as numerous pit features. Shovel tests and units were excavated to determine site limits and vertical integrity of deposits and pit features. After plotting densities of ceramics, it appears that the site was occupied differentially during the Middle and Late Prehistoric. This area has been used extensively as a ricing site due to the quality and quantity of wild rice. It is possible that these pit features and the differential prehistoric use of the site are related to ricing activities.

Kluth, Rose (Leech Lake Heritage Sites Program): [45] (see Kluth, David)

Knecht, Rick (Kodiak Area Native Association)

[100] **The Little Ice Age and Late Prehistoric Culture Change on Kodiak Island, Alaska**
Recently obtained archaeological data from Kodiak Island, Alaska indicates that the houseforms, settlement patterns, and artifacts diagnostic of the Koniag phase came into being shortly after A.D. 1400. It is argued that these changes are linked to the onset of the Little Ice Age, which impacted the Kodiak Archipelago between A.D. 1400 to 1710. These changes were accompanied by greater emphasis on riverine fish resources, and a decline in sea mammal hunting. It is suggested that similar changes in late prehistoric settlement and houseform observed elsewhere in coastal Alaska may be also linked to climatic changes associated with the Little Ice Age.

Knight, Vernon James (Alabama)

[18] **Some Developmental Parallels Between Cahokia and Moundville**
The pattern of internal development of the Mississippian center at Cahokia shows interesting similarities to the development of Moundville, even though the two cases are essentially independent and the corresponding events are not synchronous. Both centers emerged as full-blown towns having formal plans. Then, at the height of centralized authority, their residential use was subordinated to public and ceremonial functions. Thereafter each center probably had a residential component limited to the nobility and their retainers. As public architecture reached grandiose dimensions, people moved away. Gradually, central planning broke down, and the architectural emphasis became oriented to specific mounds.
[104] Discussant

Knudson, Ruthann (National Park Service): [67] Discussant

Koetje, Todd A. (Indiana University of Pennsylvania)

[60] **Intraregional Integrity During the Magdalenian of SW France**

Intrasite spatial patterning in the SW French Magdalenian is relatively diverse, but shows some clear intraregional similarities, and contrasts well with spatial patterning from Magdalenian sites in other well defined regions in Europe (the Paris Basin, and SW Germany for example). There is also a substantial amount of evidence supporting the notion of significant regional integrity during the Magdalenian in this area. Artistic styles, raw material distribution, site chronology and chronostratigraphy, and most recently occupational seasonality can all be used to argue that there is substantial within region movement and less extra regional movement during the Magdalenian.

Koettig, Margrit: [47] (see Johnson, Ian)

Kohler, Timothy A. (Washington State)

[35] **Comparing Paleodemographic Estimates Using Classical Estimation and Kriging Applied to Sherd Counts/Weights and Rim Arc/Radius Measures**

Four different estimates for the total ceramic inventory at a site may be generated by applying these two estimation techniques to these two data sources. The information provided by their comparison is explored in the context of three 12th and 13th century habitation sites on the Pajarito Plateau of north-central New Mexico.

Kolata, Alan (Chicago) and *Michael Binford* (Harvard)

[11] **Human-Climate Interactions in the Lake Titicaca Basin of Bolivia**

In this paper, I describe the structure and function of the Lake Titicaca Basin ecosystem of Bolivia as it changed through the past 5,000 years in response to climate change and to human activities. Our general hypothesis is that climate variation drives the basin's water balance, and thus lake elevation, at a temporal scale perceived by humans. Local cultures responded to climatic and environmental change by creating new resource-extraction technologies and the organizational infrastructure to support these technologies. In at least one case in the history of the Lake Titicaca Basin, abrupt climate change induced radical demographic and social transformations in an indigenous civilization.

Kolb, Charles C. (National Endowment for the Humanities)

[10] **"And Then They fired the Pottery...": Ceramic Ecology and Materials Science in the Evaluation of the Critical Stage of Ceramic Production**

Archaeologists often loosely use materials science terminology in considering "firing" as a critical stage in the production of a pottery vessel since the heating of ceramic materials actually includes "baking," "burning," and "firing." Distinctions may also be made between bonfires, ovens, and kilns. Chemical reactions of clay(s), aplastics, and liquids are reviewed; and the importance of fuel types, "firing" temperatures, porosity, the thermal expansion properties of minerals, and ceramic colors are related within a context of Ceramic Ecology (Matson 1965, Kolb 1989). Archaeological and ethnographic examples from throughout the world and experimental data are employed to demonstrate the kinds of technical and sociocultural information that may result from analyses.

Koonce, Andrea L. and Kent A. Schneider (both, USDA Forest Service)

[132] **Human Responses to Fire Behavior: Clues for Interpreting the Past**

Fire has been and remains a significant factor in human cultural development and change through time. We use its evidences to chart historic and precolombian landscapes, to date events, to help identify settlement systems from a broad range of botanic and faunal materials preserved by fire activities. Understanding how contemporary indigenous people use and respond to fire can help us interpret fire use in the archaeological record. This paper will illustrate some examples.

Kopytoff, Igor (Pennsylvania): [85] Discussant

Kornbacher, Kimberly D. (Washington)

[112] **Axes as Indicators of Agriculture and Interregional Interaction: Evaluating the Empirical Evidence**

Axes are among the most ubiquitous artifacts of Ecuador. They have long been regarded as constituting evidence of both agricultural activities and interaction between the sierra and oriente. Despite their abundance and the numerous assumptions about their use and movement, the artifacts have occasioned little empirical investigation. The objectives of this research include evaluating traditional assumptions about the function and trade of tools termed axes by means of physical analyses. Data generated during the first phase of work involve documentation of the range of morphological variation across distinct environments and time periods. The results of macro and SEM analyses of wear patterns and raw materials analysis are also presented. These preliminary data are examined with respect to information gained about function and movement of axes.
[22] (see Wilhelmsen, Kris H.)

Kornfeld, Marcel (Wyoming): [28] (see *Larson, Mary Lou*)

Kornfeld, Marcel, and George C. Frison (both, Wyoming)

[105] **High Altitude Paleoindian Occupation of the Rocky Mountains**
Middle Park is one of the high intermountain basins of the Central Rocky Mountain that has been occupied continually for over 11,000 years. Our studies of the Paleoindian occupations suggest that many of the well-known Plains complexes, as well as some mountain complexes, are present in Middle Park. In this paper, we concentrate on the sites and site collections we have investigated most thoroughly (Folsom, Goshen/Plainview, and Jimmy Allen), but review other sites as well. Analysis of chipped stone and bone yields information on organization of Paleoindian technology and settlement-subsistence strategies. In addition, paleoenvironmental studies suggests the nature of Paleoindian landscapes and environments.

Koryakova, Ludmila (Ural State University)

[31] **Migrations of the Iron Age in Northern Eurasia**

By the middle of the 1st millennium B.C. the iron industry became customary in large areas of Northern Eurasia. This has levelled social development and contributed to chiefdom organization, a part of which tended toward the state formation. This process started from general cultural change, which accompanied the new technology introduction. Eurasian nomadism, having military orientation provoked cultural instability not only in the steppe but in the forest zone. By the end of the 1st millennium B.C. Eurasian World has been divided into several parts between most powerful States. Climatic fluctuations disturbed this system and forced tribal communities to change their places. One can distinguish several kinds of migrations within Eurasian space, which finally prepared the Great Migration of Peoples.

Kouchoukos, Nicholas (Yale)

[58] **Analyzing the Spatial Organization of Pottery Production in Late Prehistoric Khuzistan, Iran**

Inferring the spatial organization of pottery production from regional distributions of pottery and kiln debris requires parallel analysis of trends in settlement patterns and in modes of pottery production. As groups nucleate and disperse under various political and economic conditions, contexts for exchange among artisans of techniques, innovations, and resources are created or destroyed, and networks for distributing the material products of such interaction are reorganized. Documenting these changing relationships among potters and their products gives key concepts such as specialization and standardization specific and explainable meanings. This approach is demonstrated using evidence from early fourth millennium Khuzistan, Iran.

[14] (see *Shlasko, Ellen*)

Kowalski, Jeff (Northern Illinois): 114 (see *Walters, Rachel*)

Krause, Richard A. (Alabama)

[115] **Coffee, Sugar, and Baked Clay: Taino Ceramics from Puerto Rico's Cerrillos River Valley**

Ceramics from the sites of La Victoria (PO23) and Plan Bonito (PO27) in Puerto Rico's Cerrillos River Valley will be described. The PO23 sample, an estimated 572 vessels, was drawn from domestic debris and the ruins of a domicile. The PO27 sample, as estimated 1,146 vessels, came from the detritus of village life and the debris found amid the ruins of a rectangular ball court. The PO23 ceramics indicate an Ostionen Ostionoid occupation early in Rouse's Period III. The Chican Ostionoid pottery from PO27 place it early in Rouse's Period IV.

Kristan-Graham, Cynthia (Atlanta College of Art)

[114] **Trade, Tribute, and Art at Chichen Itza**

Besides its innovative forms of government and ritual, the success of Chichen Itza was based on a complex economy; even the notions of tribute and trade are inscribed into the site plan and imagery. The Sacred Cenote, a natural sinkhole and repository for offerings and trade goods, is the axial and ritual focus of the site. Framing the processional path to the cenote is the Temple of the Warriors, which commemorates policy membership and tribute. In concert these two points highlight the importance of tribute and trade to the sustained ritual and economic life of Chichen Itza.

Kristiansen, Kristian (University of Gotenberg)

[55] **Long-Term, Human Induced Environmental Change in Thy, Denmark**

The Thy Archaeological Project was conceived to put the region's extraordinary protected monuments in environmental and social contexts. Critical to the project is the collaboration with the Danish Geological Survey which documents trends in human induced environmental change. From the Late Paleolithic to the present this survey has obtained pollen samples demonstrating drastic

changes in the environment. From the Late Neolithic to the Early Bronze Age, these include deforestation and the increase in grazing land and heather. These changes contribute to the substantial alteration of the landscape in the Bronze Age as social structure evolves. This survey work provides an overall context, not only for the monuments, but also for the basic household structure through time.

Krochock, Ruth (Southern Methodist)

[114] **Cross-Correlation of Epigraphic and Archaeological Data at Chichen Itza**

This paper demonstrates how themes expressed in the hieroglyphic inscriptions of Chichen Itza (i.e., collective participation in ritual, building dedication, identification of ancestors, and bloodletting) are also expressed in other categories of data, such as iconography, architectural design and function of buildings, artifacts, and settlement patterns. The cross-correlation of data generates discussion about internal political and social organization, local alliances, and the development of Chichen Itza as a unified city.

Kruger, Robert (Pittsburgh)

[82] **Searching for the Body of a Colossal Olmec Head: Rural Olmec Settlement Patterns and Their Implications for Local Economic Organization**

A recent survey of an area between the Olmec sites of San Lorenzo and El Manati near the Gulf Coast of Mexico has rediscovered a dispersed pattern of Early Formative housemounds along the levees of an ancient channel of the Coatzacoalcos River. Nearby uplands, in contrast, are almost devoid of occupation during this period. These findings, while strengthening arguments for the riverine orientation of Olmec economy in this area, also contradict popular theories concerning the direct monopolization of highly productive levee lands by the elite as a means of social and economic control.

Krupa, Marcy (Chicago)

[60] **Local Adaptations to Coastal Ecological Niches During the Magdalenian in Northern Spain**

Archaeological deposits from northern Spain demonstrate that the varied ecological niches of the coast were exploited more fully and intensively during the Magdalenian than they ever had been before. During the Magdalenian, inhabitants of cave sites such as El Juyo, Otero and La Riera made full use of a variety of resources available along the coast including molluscs, fish, crustaceans and seaweed. Data from the sites illuminate different systems of marine resource procurement that can be seen as local adaptations to the varied ecological niches of the northern Spanish coast.

Kuckelman, Kristin A. (Crow Canyon Archaeological Center): [19] (see *Lightfoot, Ricky R.*)

Kuijt, Ian (Harvard)

[84] **The Emergence of Social Complexity in the Levantine Neolithic: Community Identity, Ritual Practices, and Village Planning as Seen from Jericho**

Recent research on the transition from the Levantine Natufian to the aceramic Neolithic has provided conflicting evidence for increasing social complexity (regional ranking of sites, incipient village planning, and extensive trade networks) with that of continuing "egalitarian" social practices (standardization of the size and shape of dwellings, and common burial practices with no grave goods). In this paper I argue that these data, such as that from the site of Jericho, reflect the emergence of new and increasingly hierarchical forms of social and ritual organizations that emphasized communal participation in ritual practices and shared access to resources so as to mitigate new stresses associated with agricultural labor needs, population aggregation, and the maintenance of social communities.

Kulisheck, Jeremy R. (Southern Methodist)

[126] **Field Houses and Population Estimation in the U.S. Southwest**

The formation of large aggregated communities in the U.S. Southwest is accompanied by the appearance of small, seasonally occupied "field house" sites, constructed by aggregated site occupants. Because of their small size and relationship to the aggregated sites, field houses can be used as proxies for aggregated site population levels. The use of field houses as a proxy, however, requires that the relationship between field houses and aggregated sites be defined. Archaeological and ethnological data are explored to delineate the role of field houses in aggregated site settlement systems, and their use in estimating region levels of population are evaluated.

Kunkel, Kristine M., and Stephen R. Durand (both, Eastern New Mexico)

[42] **Timber Harvesting Using Stone Axes**

This study reports the results of a tree harvesting experiment in the San Juan Basin, New Mexico. Replicated stone axes were used to harvest trees similar to those used in the construction of Chacoan

Great Houses. Cutting, limb trimming, debarking, and end finishing of the trees was timed. The results include a refined estimate of person hours needed for timber procurement, an increased understanding of prehistoric stone implement use and its durability, and an improved understanding of the prehistory within Chaco Canyon.

Kunz, Michael L. (Bureau of Land Management) and **Maureen L. King** (Washington)

[70] **Paleoindian Origins: New Data and New Questions from Arctic Alaska**

During the middle decades of this century, researchers began questioning why evidence of the Paleoindian tradition remained elusive in Beringia, where the ancestors of these ancient New World cultures supposedly originated. Research at the Mesa site has provided firm evidence of a Paleoindian tradition in eastern Beringia. However, this tradition has yet to be found in western Beringia. Exploration and construction, the activities providing the first hints of a Paleoindian presence in Alaska, have occurred on a similar scale in Siberia providing no clues, suggesting the Paleoindian tradition may be strictly a New World phenomenon possibly stemming from non-Beringian antecedents.

Kurjack, Edward B. (Western Illinois) and **Ruben Maldonado C.** (INAH-Centro Regional de Yucatán)

[130] **Dzibilchaltun Revisited**

Excavation and survey at Dzibilchaltun during the 1950s and early 1960s led to interpretations that seldom coincided with conventional wisdom. The layout of the site, with major architectural groups united by raised causeways, indicated a large settlement with a clear overall organization. The central plaza, where the longest causeways intersected, was tentatively seen as replication of elite housing complexes. Recent excavation of the central plaza indicates that some if not all of the structures there were communal buildings that clearly contrast with the domestic architecture that has been studied at the site.

Kuzmin, Yaroslav V. (Pacific Institute of Geography)

[116] **Paleoindian Subsistence: A View From Siberia**

This paper presents a suite of paleogeographical, geochronological, and paleoenvironmental data from late Paleolithic archaeological sites in Siberia. These data are used to interpret subsistence changes during the Pleistocene. Given that Paleoindian progenitors are characterized in the Paleolithic record of Siberia, this information is crucial to our explication of Paleoindian subsistence strategies.

Kuznar, Lawrence A., and **Robert Jeske** (both, Indiana-Purdue at Fort Wayne)

[33] **The "Roll" of Dogs in Archaeological Site Formation Processes: It's the Pits**

A recurrent feature in archaeological sites of the American Midwest is the "amorphous" pit. Often symmetrical, shallow and diffuse, these features frequently contain little material culture that differentiates them from surrounding midden. Ethnoarchaeological study of dog digging behavior suggests that canine disturbance may be a significant factor in site formation and in the formation of amorphous pits. Dogs dig under a variety of conditions, some of which are expected in hunter-gatherer or horticultural habitation sites. Excavation of recent dog-holes and dog "wallows" reveals marked similarities between the canine disturbances and certain features reported in the archaeological literature.

Kvamme, Kenneth L. (Boston)

[136] **The Large-Scale Structure of Chipping Debris Scatters: Linking GIS Visualization with Field and Experimental Archaeology, Computer Simulation, and Mathematical Modeling**

In large-scale mappings of extended chipping debris sites, GIS visualization and spatial statistics suggest sorting of the debitage by size and type in scatter after scatter. Experimental archaeology confirms these observations. These results, together with computer simulations used to replicate dense scatters of superimposed flaking events, yields further insights into the processes at work, allowing explanatory models to be developed. Simple mathematical models fit to the data describe the patterns well, but it is mathematical deduction which shows that the observed size-type sorting *must* occur in chipping debris contexts.

[5] **GIS for Personal Computers: A Hands-On Workshop**

LaMotta, Vincent L. (Arizona): [85] (see Walker, William H.)

La Porta, Philip C. (Hunter)

[57] **The Spatial Distribution of Prehistoric Lithic Resources: Geological Models and the Elucidation of a Prehistoric Mining District**

Predictive models which target potential prehistoric lithic resources, based on extensive geological mapping, have been constructed for diverse geological terrains in the Appalachians. A continuous

suite of lithic resources appears to occur along the entire trend of the Appalachians. Recently discovered quarries suggest a sophisticated mining technology was shared throughout the region. A data base, constructed from the physical and chemical properties of the cherts, will serve to aid future provenance studies.

Ladefoged, Thegn (University of Auckland), **Richard P. Jennings** (University of Auckland), and **Michael W. Graves** (Hawaii)

[69] **The Agricultural Intensification of Kohala: A GIS-Based Analysis of a Leeward Hawaiian Fieldsystem**

The members of leeward Hawaiian chiefdoms intensified the dryland agricultural fieldsystems in their territories to establish a material basis for political hegemony. The spatial distribution of the Kohala system is defined by aerial photogrammetry. A GIS analysis of a digital elevation model, precipitation rates, and soil distributions, clearly delimits the environmental setting of the fieldsystem. The intensification of the system is modeled by the automated identification of discontinuities in the alignment of rock walls. The analysis suggests that differential intensification took place in diverse social and environmental contexts.

Lanata, José Luis, and **Norma Ratto** (both, University of Buenos Aires)

[22] **Tool-Kits and Sea Lions: A Case Study from Tierra del Fuego**

In this paper we discuss the relation between human population and sea lions in eastern Tierra del Fuego. A specialized tool-kit is traditionally assumed to be the most appropriate for hunting this prey. By applying a Darwinian perspective in the analysis of the weapons' raw material and the pinnipeds' ethology, we demonstrate this assumption is not necessary true. We conclude that pedestrian hunter-gatherers had not developed a particular tool-kit based on a) the sea lions' predictability, b) raw material quality and c) the utilization of multiple strategies in hunting this prey.

Landon, David B. (Michigan Tech) and **Michael Toplyn** (Harvard)

[68] **Uses of Morphometric Data for Studying Domestic Animal Populations**

This paper reviews the uses of metric data from bones, with a particular emphasis on the applications to the study of domestic animals. Metric data have been used to look at animal husbandry practices, breed variation, sexual dimorphism, environmental change, and the process of domestication. Data from specific case studies is used to show the applicability of metric data to interpreting other issues, including adaptive response and provisioning systems.

Langsjoen, Odin M. and **Arthur Aufderheide** (both, Minnesota-Duluth)

[49] **The Role of Cultural and Genetic Determinants in the Production Contrasting Dental Pathology Patterns Found in Pre- and Post-Ceramic Northern Chile Coastal Populations**

Dramatic differences were found in degenerative and infectious dental complications of preceramic and post-Ceramic populations occupying the northern Chile coast between 7000 B.C. and A.D. 1000. Several distinctive cultural and genetic determinants are proposed as etiological agents.

Larick, Roy: [57] Discussant

Larimer, Grayson (Minnesota-Duluth): [51] (see Peters, Gordon R.)

Larralde, Signa (Bureau of Reclamation)

[19] **Anasazi Axes and Mauls as Cleavers and Clubs**

Prehistorians are considering the grim prospect that the Anasazi engaged in cannibalism, warfare, violent crime, wife beating, and executions. The skeletal evidence for these actions often suggests the wielding of heavy, blunt objects to cause bone fractures and breakage. Large hafted tools like axes and mauls, which are common in Anasazi assemblages, are obvious candidates for weapons used to cause such damage. This paper reviews Southwestern ethnographic and archaeological evidence for the employment of large hafted tools as instruments of death, dismemberment, and destruction.

Larson, Daniel (California State) and **Hector Neff** (Research Reactor-Missouri)

[22] **The Evolution of Exchange**

Movement of materials through space is abundantly and easily documented in the archaeological record. The very ubiquity of this phenomenon implies that it arises through some selection-driven evolutionary process rather than by chance. In this paper, we focus on exchange among sedentary groups. We argue that environmental variation favors exchange in two ways. On one hand, geographic variation in an environment characterized by relative temporal stability favors simultaneous trends toward local specialization and exchange. On the other hand, temporal variation in climate favors exchange as a buffer against local agricultural shortfalls independent of local specialization. This model leads to prediction about contrasts in ceramic exchange patterns between

the Southwest U.S., where year-to-year variation in moisture availability is high, and Mesoamerica, where moisture availability tends to be more predictable.

Larson, Lynn L. (Larson Anthropological/Archaeological Services)
[43] **West Point, Seattle, Washington Subsistence Patterns and Southern Puget Sound Subsistence Organization**

The West Point site complex, Seattle, Washington subsistence data set shows dramatic changes in species selection between 4200 and 2700 B.P. across fish, shellfish, mammal, and plant assemblages. Feature and seasonality data suggest subsistence changes are linked to development of fish and shellfish processing technology for storage. Shellfish processing continues as an important activity until 200 B.P. West Point data are compared to recent studies in the Gulf of Georgia area to assess differences in Northwest Coast subsistence organization.

Larson, Mary Lou (Wyoming): [39] (see Francis, Julie)

Larson, Mary Lou and Marcel Kornfeld (both, Wyoming)
[28] **Chipped Stone Nodules: Theory, Method, and Several Northwest Plains Examples**

With the recent proliferation of refitting studies, grouping artifacts into raw material nodules in preparation for refitting is becoming more common. Even if little is found to fit, nodules still yield information beyond that which can be gained by just identifying raw material, or even raw material source locations. We review the theoretical and methodological implications of nodule analysis and present several case studies using Northwest Plains chipped stone assemblages ranging in age from more than 10,000 to 100 years old. Comparisons between different assemblages are used to address implications for forager technology.

Larsson, Lars (University of Lund)
[16] **Settlement and Environmental Changes in Southern Sweden During the Late Glacial**

Our knowledge of Late Paleolithic settlements in Southern Sweden has been increased significantly. New locations have been investigated. Finds recovered indicate brief visits during Allerød and Younger Dryas. New studies into the changes which took place in the strait Öresund during the ice melting phase point to the existence of a land bridge only for short periods. The outflow of meltwater through the strait Öresund at other times during the Late Glacial period prevented or obstructed the fauna migration routes. These factors must be taken into account in any comparison of Late Paleolithic settlement in southern Sweden with the various cultural complexes which occur in North Germany and in the Danish region.

Laub, Richard S. (Buffalo Museum of Science)
[87] **The Pleistocene Archaeological Record of the Hiscock Site (Western New York State) and Its Geological Context**

During the late Pleistocene, lakes and their wetlands formed a 90-mile east-west continuum across Western New York and southern Ontario with a narrow breach 40 miles east of Buffalo. This corridor may have concentrated roving animals and people, whose presence is richly documented in spring-deposited sediments at the Hiscock Site. The productive Pleistocene record was basally bounded by a winnowing event, and terminated upward by a depositional hiatus.

Lawlor, Elizabeth J. (California-Riverside)
[131] **Distinctive Phytoliths from Mojave Desert Dicots**

Phytolith surveys of modern Mojave Desert soils reveal a great variety of platelike cells and epidermal appendages similar to those Bozarth considers distinctive for herbaceous and woody dicots. They include polyhedral and "jigsaw-puzzle piece" cells, opaque perforated platelets, and glandular trichomes. I present the results of reference work and propose a classification scheme that fits into Pearsall's system. Identification of these should allow reconstruction of early prehistoric Mojave Desert plant communities, which are unknown in the low-elevation bajadas between packrat habitats. Archaeological applications include analysis of ash lenses for the use of brush and ethnobotanically important dicot seeds.

[43] (see Prior, Christine)

Lazrus, Paula Kay (New School for Social Research)
[76] **Sardinia and Contemporary Italy During the Neolithic-Bronze Ages**

Issues of settlement and land-use during the Neolithic-Bronze Age transition on Sardinia are often examined from an insular point of view. Neolithic agricultural settlements are generally confined to river valleys and lagoon coasts while a significant increase in population during the Bronze Age is reflected in the exploitation of a much wider range of habitats. This paper confronts the Sardinian Neolithic and Bronze Age strategies in terms of land-use, economics and potential ecological impact with those of contemporary cultures on the Italian mainland.

Leach, Elizabeth (Metropolitan State)

[45] **Other Ecologies: Geoarcheology and 19th Century Dakota Geologic Systems**

Geoarcheology is the study of the direct interactions between cultural systems and the geologic world. Study of the ways in which indigenous peoples view the landscape will help geoarcheologists interpret geologic remains on archaeological sites and the placement of those sites in the geologic setting. Ethnohistorical analysis of the 19th-century Dakota culture reveals the geologic world as a manifestation of four principle spiritual essences—Inyan, Maka, Skan and Wi (Stone, Earth, Sky/Movement, Sun). Dakota ecology consists of the matrix of relationships among these four and the actions they are owed.

Leach, Foss (Museum of New Zealand)

[68] **Some Implications of High Protein Marine Diets in Prehistoric South Pacific Economies**

Ethnographic records in the 18th and 19th centuries emphasize the role of predatory fish from the upper levels of the food chain in many Oceanic societies. Studies of archaeological fish bones in the Pacific region do not generally show the same emphasis, although there are notable exceptions revealed by trace element and isotope studies. In one Oceanic society marine foods appear to have contributed as much as 90% of the diet, raising questions of protein and heavy metal toxicity. This is further indicated by exceptionally high levels of mercury in human tissues compared with other societies where this has been suspected, such as Faroe Islanders and Arctic communities who also relied on upper food chain predators to a significant degree. Some unusual features of language and behavior were recorded in this Oceanic society before depopulation in the 19th century. The working hypothesis is that this reflects methyl mercury intoxication in high status individuals.

Leach, Jeff D. (Centro de Investigaciones, El Paso), **Raymond P. Mauldin** (New Mexico), and **H. Curtis Monger** (New Mexico State)

[30] **Eolian Geomorphology and Archaeological Patterning in the Desert Southwest**

Using extensive archaeological survey and excavation data from the Chihuahuan Desert, in conjunction with recent geomorphic observations, we observed that eolian processes restructure the archaeological record in complex ways. By determining site boundaries, eolian erosion and deposition influence elements such as site size, assemblage size, assemblage content, the temporal placement of sites, and artifact variety. These elements form the basis for all models of cultural reconstruction and adaptations in this, as well as other, desert regions. However, our analysis suggests that these elements are primarily a function of post-depositional geomorphic processes rather than past adaptive decisions.

Leach, Melinda (North Dakota)

[133] **Tracking the Ancients: Obsidian Sourcing as a Clue to Prehistoric Mobility**

Mobility continues to be a critically important, and poorly modelled, dimension of prehistoric gatherer-hunter adaptation. Prehistoric mobility patterns are difficult to identify—the elusiveness of definable site "types" and the dilemma of recognizing territories confound the issue. Chemical sourcing of obsidian tools and flaking debris has yet to be fully exploited as a device for helping to address processual questions related to population movements. The Northwestern Great Basin, a volcanically active region with great potential for obsidian hydration and sourcing studies, provides the backdrop for an examination of long-term mobility and shifting patterns of land use during the Holocene.

Leader, Jonathan M. (South Carolina Institute of Archaeology and Anthropology)

[98] **Southeastern Native Copper: An Overview of Form and Context**

This paper selectively synthesizes prior and present work in Native American copper artifact studies in the southeastern United States; and presents an overview of their context in terms of chronology, technology, and culture. Competing interpretations and lacunae are briefly discussed with a final emphasis on areas for future research and cooperation.

Lebo, Cathy J. (Southern Methodist)

[30] **Prelude to Agriculture: Climatic Risk and Cultural Response in the American Southwest**

A recent effort to model the productivity of corn agriculture on the Colorado Plateaus indicates the essential role of strategies that buffer variability in yield. Behavioral models based on risk aversion, linked to either amplitude or frequency of risk, impose an unrealistic standard of perfect knowledge and elastic response. This study examines the origin and stability of corn agriculture in light of what prehistoric farmers knew (crops failed) and when they could respond (after crops failed). To understand how corn agriculture thrived for centuries one must understand how it collapsed.

Lebo, Susan A. (Bishop Museum)

[22] **Post-Contact Ceramic Change in Honolulu, Hawaii**

Stratification has not been used to examine post-contact ceramic change in Hawaii. Our understanding

of post-contact ceramic assemblages is limited to ad hoc applications of inferred chronologies based on archaeological assemblages on the U.S. Mainland. Ceramics were imported to Hawaii during the post-contact period from Europe, Asia, and the Americas. Frequency seriations are undertaken to develop a locally inferred chronology which is then used to examine changes in ceramic selection at four pre-1900 sites in Honolulu.

LeCount, Lisa (California-Los Angeles): [64] (see *Yaeger, Jason*)

Lee, Yun-Kuen (Wayne State) and *Qiang Gao*

[77] **Kinship Reconstruction in Chinese Prehistory**
Kinship is one of the most important adaptive features of human groups. Nevertheless, its archaeological reconstruction is often difficult or illusory. Based on the assumption that kinship system may have been regulated by a biological network, past kinship can be illuminated by the systematic study of human osteological remains. This paper reports the reconstruction of the biological relationship among the interments of a 5th millennium B.P. multiple secondary burial site in northwestern China and demonstrates that biological methods are revealing for kinship study in archaeology.

Lees, William B. (Oklahoma Historical Society): [74] Participant

Leigh, William L.

[29] **Garbage, Guts, and Greed: The Trafficking of Civil War Collectibles?**
Trading in Civil War collectibles is brisk and robust. Fortunately, the combination of four market factors is focusing interest on nonexcavated items: (1) things which have never been buried are inherently in better shape; (2) the collecting market has, in recent years, attracted greater numbers of collectors who are, themselves, not relic hunters; (3) buried artifacts are increasingly harder to locate and people that do find them are now less willing to sell them; and (4) nonexcavated items are widely considered to be better and safer buys. Condition, demand, availability, and value are shifting the focus of Civil War collecting toward heirloom and nonexcavated items. Consequently, commercial threats to Civil War sites may soon be a thing of the past.

Lekson, Stephen H. (Crow Canyon Archaeological Center)

[35] **The Logic of Regional Synthesis**
Because of the remarkable visibility of its sites, the Southwest has a long history of innovative regional synthesis. George Gummerman has been associated with many of the most influential recent programs: SARG, Anasazi in a Changing Environment, Dynamics of Southwest Prehistory and most recently, SFI-based approaches. The development of logic for regional synthesis in the Southwest reflects larger philosophical debates; because of the unusual nature of the record, that southwestern logic can, perhaps, inform those debates. This paper examines the development of regional synthesis in the Southwest, and suggests and demonstrates new epistemological approaches and logics.
[48] Participant

Lenihan, Daniel J. (National Park Service): [29] (see *Murphy, Larry E.*)

Lennstrom, Heidi A. (Bishop Museum)

[69] **Patterns in Paleoethnobotany: An Archaeobotanical Transect on O'ahu, Hawaiian Islands**

Small-scale investigations in Hawaiian paleoethnobotany have demonstrated the potential of archaeobotanical materials as a source of information on Hawaiian prehistory. However, to gain a more complete understanding of the interaction between pre-Contact Hawaiians and their environment a systematic approach is advocated. This report stems from a large-scale paleoethnobotanical study in Hawaii which draws upon archaeobotanical samples from a transect crossing various environmental zones on the island of O'ahu. This transect contains numerous archaeological sites of varying types. Patterns of differential plant use are documented and linked to varying ecological zones, cultural preferences, activities, and occupation periods.

Lensink, Stephen C., Fred A. Finney, and Richard L. Fishel (all, Iowa)

[45] **Rethinking Mill Creek Settlement and Agriculture Systems: New Data from the Phipps, Double Ditch, and Litka Sites**

Excavations were conducted during the summer of 1994 at three sites of the Eastern Initial variant of the Middle Missouri tradition in Iowa: Phipps, Double Ditch, and Litka. The preliminary results indicate that past models of Mill Creek settlement patterns and agriculture need to be reworked and expanded. New data point to 1) diverse agriculture field techniques utilizing both ridges and hills, 2) preplanning of at least one fortified village, 3) multiple reoccupations of some villages, and 4) occupation of other villages on a much shorter time than previously thought. Faunal material also

fails to confirm the temporal trends used to support the episodic climatic model of the 1960s.

Lentfer, Carol (Southern Cross University)

[131] **Modern Phytolith Assemblages from the Bismarck Archipelago, PNG**

In a tropical environment where high plant diversity exists and vegetation communities have been little studied, there may be an advantage in examination and comparison of whole phytolith assemblages rather than relying on the identification of indicator phytoliths. Soil samples from a variety of cultural and natural landscapes were collected from the Talasea Peninsula (P.N.G.) and the phytolith assemblages as well as the carbon content were compared. I report on the progress of this research and its potential for determining environmental change associated with prehistoric settlement and land use in the Bismarck Archipelago.

Leonard, Kathryn (Vassar): [133] (see *Johnson, Lucy Lewis*)

Leonard, Kevin (Toronto, and St. Mary's)

[98] **Copper Artifact Production and Use in the Canadian Maritimes During the Late Woodland Period**

A Late Woodland cremation burial site (CbDb-1) in southeastern New Brunswick, Canada, has yielded the first convincing evidence that the indigenous people of the region were manufacturing copper artifacts from locally available copper. The implications of this evidence for interpretations of technology, exchange and ideology are discussed.

Leonard, L. Banks (California-Los Angeles)

[15] **Public Works in the Lower Chicama Valley, North Coast of Peru, A.D. 100-1530**

Archaeological survey data from the Lower Chicama indicate that the amount of state-mobilized public labor increased through time until the Inka conquest about A.D. 1470. From A.D. 100 to 950, most public labor was expended in monumental constructions. From A.D. 950 to 1470, monument-building was deemphasized while public labor expenditure shifted to massive irrigation and agricultural projects. During the brief Inka period, few public works were executed. In each period, the nature and quantity of public labor expenditures were related to state strategies of socioeconomic control.

Lesure, Richard (Michigan)

[40] **The Social Context of Early Formative Figurine Production in Coastal Chiapas, Mexico**

From 1400-1000 B.C. the production of ceramic figurines became increasingly specialized in coastal Chiapas, Mexico. A gap between crude and sophisticated representations indicates contemporaneous unspecialized and specialized production, with the former falling off through time. Figurines, however, were not prestige goods, or subject to political control. Instead, the increasing elaboration of figurines tracked an increasing social concern with bodily adornment and was probably related to a reconfiguration of social identities. Only after specialization emerged were figurines manipulated by emerging elites. A complex relationship between specialization and early sociopolitical complexity is revealed.

LeTourneau, Philippe D. (New Mexico)

[123] **The Folsom Problem**

The discovery of fluted points embedded in the rib cage of an extinct bison near Folsom, N.M., resolved the controversy over North American human antiquity and provided researchers with an easily recognized temporal artifact type, the Folsom point. The reliance on Folsom points as temporal markers has implications for unit reliability and validity. Of the hundreds of Folsom point sites, fewer than 15 are dated. Small sample size and a 700-year time-range limit the Folsom point's reliability as a temporal type. Problems of validity arise when the Folsom point is used to direct research into "Folsom" settlement, subsistence, and technology.

Levine, Mary Ann (Massachusetts-Amherst)

[98] **Tracing the Exchange of Native Copper among Hunter-Gatherers in Northeastern Prehistory**

Native copper artifacts have been unearthed from a variety of Late Archaic and Early Woodland sites in the Northeast. Although most scholars have assumed that native copper was procured exclusively from Lake Superior deposits, this assumption has not been tested. This paper questions the dominant model of native copper procurement in Northeastern prehistory and reports on results from trace-element fingerprinting of copper from numerous archaeological sites and geological deposits. This research investigates whether Late Archaic and Early Woodland hunter-gatherers utilized one dominant source of copper or procured copper from several deposits.

Levy, Janet E. (North Carolina-Charlotte)

[23] **Gender, Power, and Heterarchy in Middle-Level Societies**
The concept of heterarchy provides a useful perspective on the interrelationships of gender and power. Heterarchy emphasizes multiple sources of influence and power within and between communities, while also drawing attention to flexibility and fluctuation in relationships of influence, power, and prestige. Examples are drawn from Bronze Age Europe and late prehistoric southeastern United States.

Levy, Thomas E. (California-San Diego)

[95] **The Late Neolithic-Early Chalcolithic Transition—New Views from the Northern Negev**
The 1990–1992 excavations at Gilat, a Chalcolithic (ca. 4500–3500 B.C.) cult center in Israel's northern Negev desert, provide new data concerning the Late Neolithic–Early Chalcolithic transition in the southern Levant. The Gilat stratigraphic sequence, new radiocarbon dates from the site, and statistical analyses of several Negev Chalcolithic ceramic assemblages contribute new information concerning the processes of settlement change at the end of the Neolithic period. The new data indicate more cultural continuity between these two periods than is generally assumed.

Lewarch, Dennis E. (Larson Anthropological/Archaeological Services)

[43] **Development of Local Styles and Adaptations in Puget Sound and the Gulf of Georgia**
Cluster analysis and multidimensional scaling techniques are used to compare recently analyzed Southern Puget Sound assemblage data with previously published artifact type lists from Northern Puget Sound and Gulf of Georgia sites. Functional types demonstrate a long temporal span of complex, multi-season settlements throughout the region. Culture history types indicate broad regional style and settlement function similarities prior to 3500 B.P. Southern Puget Sound cultural systems develop a separate stylistic and functional province after 3500 B.P. in concert with regional changes in subsistence-settlement pattern organization.

Lewenstein, Suzanne (Universidad de las Américas-Puebla)

[78] **The Abandoned Raramuri Residence: An Archeological Perspective**
A 1994 study of abandoned houses in the Sierra Tarahumara of southwestern Chihuahua, Mexico centered around the mapping of stone structures and cave dwellings, the traditional summer and winter homes of the seminomadic Raramuri. Mapping included residences and associated structures, as well as the spatial distribution of food remains and artifacts. In order to understand the use of space and the processes of site abandonment, and to contribute to the growing body of archeological theory on households in general, former residents and neighbors were interviewed and a study was carried out of a currently occupied household and its numerous activities.

Lewis, Brandon S. (California-Los Angeles)

[13] **Late Classic Maya Economic Integration: Perspectives from the Lithic Production Systems of Northeastern Peten**

The organizational framework of the lithic production and specialization systems of the northeastern Peten will be examined so as to provide insight into the nature of Late Classic Maya economic and political integration. This paper examines Maya societal integration from the perspective of both independent and attached forms of specialized production. This study serves as a model from which to examine the role of attached production in the evolution of political economies. In addition, it addresses the critical theoretical issue of the systemic relationship among specialization, the environment, and sociopolitical complexity.

Li, Guo (Harvard)

[77] **Neolithic Sand Bar Sites Around the Pearl River Estuary Area: A Recent Perspective**
The Neolithic sand bar sites around the Pearl River Estuary area may be divided into two periods, and the first one includes two phases. While the two periods have been dated from about 6000–3300 B.P., there appears to be a "missing link" of some 500 years between either, perhaps for the reason for transgression. There seems undoubtedly an existence of nonagricultural, coastal and relatively mobile fishing and gathering subsistence in the earlier period. Furthermore, there should have been functional differences between the primary and the secondary sand bar sites in the area.

Lightfoot, Ricky R. (Crow Canyon Archaeological Center) and *Kristin A. Kuckelman* (Crow Canyon Archaeological Center)

[19] **Ancestral Pueblo Violence in the Northern Southwest**
Evidence of violence is abundant from the prehistoric American Southwest. The authors review regional evidence of violence in the northern Southwest during the Pueblo III period (A.D. 1150–1300) and evaluate the hypothesis that violence and a concern for defense increased around A.D. 1250. Data from the Mesa Verde region lead to the conclusion that violence and a concern for defense did increase at that time, as evidenced by changes in settlement patterns, architecture, and

mortuary contexts. Increased violence is likely to have been among the conditions that contributed to the ancestral Pueblo migration from the region in the A.D. 1280s.

Limp, W. Frederick (Arkansas): [1] Instructor

Lind, Michael

[66] **The Obverse of the Codex of Cholula: Defining the Settlement System in the Kingdom of Cholula**

An analysis and interpretation of the Codex of Cholula provides information on the settlement system of the Kingdom of Cholula around the time of the Spanish Conquest. The implications for archaeological research are examined.

Lindauer, Owen (Arizona State) and *John H. Blitz* (Bowdoin)

[10] **Monuments to Complexity: North American Platform Mounds as Earthen Pyramids, Sacred Precincts, and Tumuli**

North American platform mounds can be viewed as sacred places, made so by their economic, religious, and political functions. They are found in both the American Southeast and Southwest and despite differences in the ages, frequency and morphology, platform mounds in the two regions served as integrative facilities for societies that can be described as complex. This paper reviews evidence for large-scale food storage, group feasting, ritual activity, and social differentiation associated with platform mounds that indicate similar paths in the development of complexity irrespective of different local sequences.

Lindner, Chris (Bard)

[54] **U.C. Dig: An Educational Video on Basic Excavation Techniques.**

A field school at a Late Archaic base camp in the Ohio Valley provides the setting. The first part of the video illustrates the use of transit, alindade, trowel, and screen, as taught by Kent Vickery of Cincinnati. The second part comprises a narrative of pit feature and human burial excavations. Short titles emphasize visual perception of the dig's activity and evidence. A haunting flute soundtrack reinforces concentration on detail. The learning experience comes through clearly, at times humorously, and articulates with a preservation ethic message.

Lipe, William (Washington State)

[80] **Introduction to Save the Past for the Future: An Open Forum on the Results of the 1994 Conference**

Wrap-up of events at the conference held September 19–23, 1994, and what can be anticipated for the future.

[48] Discussant

Lipo, Carl (Washington): [10] (see *Madsen, Mark*); [72] (see *Hunt, Tim*)

Lipo, Carl, Mark Madsen, and Tim Hunt (all, Washington)

[22] **Artifact Style Dynamics II: Deriving Seriation from a Network Model of Transmission**
A major task facing efforts to extend evolutionary theory to explanation of cultural phenomena is the replacement of genetic models with a theory of cultural transmission. Recent efforts have yielded models which are based upon untenable assumptions. We describe a formal model of transmission based upon simple, empirically sound assumptions about cultural transmission. In a spatially structured population, the model generates "lineage" behavior similar to that observed empirically. Our network model, when compared to previous models in a simulation environment, generates realistic transmission behavior through space, over time, and from the point of view of individual transmitting agents.

Lippert, Dorothy T. (Texas-Austin)

[54] **Wheels Within Wheels: The Many and Changing Roles of Native Americans in Archaeology**

With the passage of NAGPRA, archaeology has been forced to work more closely with Native American groups. The presence of Native American archaeologists has been seen as an encouraging sign. Archaeology must be careful, however, that myths and incorrect assumptions about Native American attitudes toward the discipline do not constrain or curtail closer working relationships. This paper will consider some of the myths surrounding Native American perspectives on archaeology and will also discuss problems Native Americans face when within the discipline.

Liss, Ken (Minnesota) and *Kathryn Reese-Taylor* (Texas-Austin)

[94] **The Cerros Survey 1993–1994: Sacred Landscape Revealed**

During the 1993–1994 seasons, the clearing of the main civic center at the site of Cerro revealed

many heretofore unknown structures and allowed for more accurate measurements of structures previously mapped. A new plan of the civic center has been compiled which gives additional information for the interpretation of sacred landscape during the Late Preclassic period. The juxtaposition of such schematic themes as the gigantic and the miniature, the mimetic and the transformed, and the sacred and the profane are emphasized within the site layout. The architects of Cerros clearly designed the space to accentuate these paradoxical perspectives.

Liston, Maria A. (Adirondack Community College): [14] (see Baker, Brenda J.)

Litwinionek, Luc (Museum of Texas Tech)
[70] **Lithic Variability and Paleoindian Technology: A Comparative Analysis of Plainview Assemblages from the Southern High Plains.**

While variability in archaeological assemblages has been documented, few studies have considered its presence as an explanatory factor in the definition of the technological organization of cultural groups. This is particularly the case in paleoindian assemblages, where expressed variations have rarely been considered as consequent at the behavioral level. This paper, through a comparative analysis of collections related to the Plainview complex, will try to understand the significance of the noted variations found in these assemblages. Ultimately, in considering variability as tied in to technological decisions, its study may lead to the better understanding of the decision-making strategies sought out by paleoindian groups.

Livingood, Patrick (North Carolina-Chapel Hill): [14] (see Davis, R. P. Stephen)

Loendorf, Larry (Loendorf and Associates)
[17] **Rock Art and the Grand Canyon**

Rock art in the Grand Canyon is abundant and complex. In a study, funded by the Southern Paiute Consortium, several dozen rock art sites were visited along the Colorado River and the tributary canyons to the Grand Canyon. Apparently the major pictograph sites were initially painted in the Archaic and visited and used for a variety of purposes by more recent tribes.

Logan, Brad (Museum of Anthropology, Kansas)
[45] **Late Prehistoric Oneota Migration to the Central Plains**

The White Rock phase, until recently believed to have been a protohistoric (ca. A.D. 1500-1700) complex of the Central Plains with Oneota affiliation, is now recognized as the archaeological expression of a late prehistoric (ca. A.D. 1300-1500) migration of Oneota people from the lower Missouri River valley. New temporal, spatial and formal data that permit this revision are presented. Of particular significance is a series of radiocarbon dates that shows contemporaneity of White Rock with western Oneota (e.g., at the Leary site, southeastern Nebraska) and correlation with environmental (the Pacific II climatic episode) and cultural (the collapse of Middle Mississippian occupations at Cahokia) dynamics of the late 13th and 14th centuries A.D. The implications of a late prehistoric Oneota movement to the heartland of the Central Plains Tradition culture area are explored.

Lohse, E. S. and Dorothy Sammons (both, Idaho State)
[136] **Computer Imaging: Capturing Archaeological Context**

Application of computer imaging to analysis of archaeological data opens new vistas in basic descriptive analysis, classification, and information transfer for research and curriculum development. This paper presents results of analyses and database construction for the Aviators' Cave site in southeastern Idaho. A unique site, in a lava tube, with an excellent preservation environment, it presents an ideal opportunity for defining cultural activity contexts. This presentation uses computer imaging to document at macro and micro levels the physical evidence for patterned human behavior.

Lohse, Jon C. (Texas-Austin), Jeff Durst (Texas-San Antonio), and Kaylee Stallings (Texas-Austin)
[13] **An Introduction to the Ancient Maya Site of RB 43**

The site of RB 43 was discovered by the Programme for Belize Archeological Project in 1993. As it was in the process of being looted, salvage work was performed that consisted of the surface collection of ceramics as well as some preliminary mapping. The information derived from these activities, supported by a season of limited excavation and an architectural analysis, reveals a Maya center having a substantial Late Preclassic and Early Classic component for this area. An overview of the site and its environmental setting, work performed, and the goals of future research will be presented in this paper.

López, Hector Salgado (INCIUA, Colombia): [127] (see Stemper, David M.)

Lopez-Cabal, John (Sonoma State)

[47] **Material-Referent Adaptation: An Experimental Approach Using Genetic Algorithms**
In Genetic-Algorithm (G-A) based simulations, an entity's genome provides the numerical values and limits within which movement, life-cycle processes, etc., are compared to those of its competitors. Recent efforts to provide these entities with the attributes and behaviors necessary to simulate archaeological phenomena has, so far, depended upon a number of as yet untested assumptions regarding human behavior, particularly those concerning the human use of and interaction with the material environment. Introducing this capability to a G-A based simulation is difficult since materials must retain certain physical and behavioral characteristics throughout phases of procurement, modification, use, and discard. This paper explores a possible solution to this problem.

Lothrop, Jonathan C. (GAI Consultants)

[36] **Paleoindian Adaptations in New York, Pennsylvania, and Ohio**

Recent research on northeastern Paleoindians has highlighted differences in adaptations with contemporaneous groups elsewhere in North America. Data from these studies have prompted several scholars to suggest that there were also adaptive differences between fluted point groups within the Northeast. This paper focuses on Paleoindian lifeways in New York, Pennsylvania, and Ohio. A review of Paleoindian systematics in these states is presented. This is followed by a consideration of the evidence for adaptive variation both within these three states and versus other parts of the Northeast.

Lorentzen, Leon (Arizona): [85] (see Nieves Zedeño, M.)

Loubser, Jannie (New South Associates)

[39] **Rock Paintings, Hierarchy, and Change in Hunter-Gatherer Communities of the Caledon River Valley, South Africa**

San hunter-gatherer communities occupied the Caledon River valley of southern Africa since the late Pleistocene. Sotho-speaking agriculturalists arrived in the area some 500 years ago, pushing the hunter-gatherers south. When the frontier of agriculturalist expansion reached its southern limit about 300 years ago, exchange relations between agriculturalists and hunter-gatherers across this frontier created opportunities for shaman/painters to enhance their status. This change in status is reflected in the rock paintings of the southern Caledon River Valley. Used in conjunction, archaeology, rock art, and ethnography show how ritual help create hierarchies in so-called "egalitarian" societies.

Lozny, Ludomir R. (CUNY Graduate School)

[63] **Where Do We Search for Paradigms. Theoretical Concepts in Polish Archaeology During the Last Fifty Years**

Can 50 years of political and economic isolation influence a scientific paradigm? Many would say: yes! But to what extent? In what manner? Does political anathema force scholars to avoid themselves and their ideas? In my paper, I will focus on an often quoted by East European archaeologists illusive concept of a "political isolationism" as a major force that hampers a flow of information and effectively slows or misguides theoretical influence in the field of archaeology. The example comes from Poland. In contrary, a set of data will be presented to argue that the so-called school of Polish theoretical archaeology inherited, first of all, the richness of local intellectual tradition.

Lubinski, Patrick M.

[43] **Pronghorn Intensification in the Wyoming Basin?**

Previous research at the Great Plains-Great Basin margin in the Wyoming Basin has implied a significant increase in the selection and mass procurement of pronghorn in the Late Prehistoric period. This poster will present results of ongoing dissertation research designed to test the validity of these interpretations and evaluate several alternative hypotheses for the observed pattern. The study reevaluates evidence for communal hunting in part through an actualistic study of a modern catastrophic death assemblage (150 pronghorn) and evidence for pronghorn specialization through a comprehensive review of prey selection patterns in the Wyoming Basin.

Lucas, Jason (Texas)

[42] **The Late Pithouse Period at Old Town**

Since 1989 investigations at the Mimbres site of Old Town have revealed an area of primarily Late Pithouse period occupation. During the apparently brief occupation of this portion of the site, several pitstructures were constructed, most of them masonry, but two of puddled-adobe construction. Superposition, evidence of remodeling, and chronometric dating indicate changes in the architectural configuration of these structures. The earlier two or three structures probably date to late A.D. 800s and are the least well known. The later five structures date to the first half of the A.D. 900s and appear oriented around a common courtyard.

Lucero, Lisa J. (California-Los Angeles): [15] (see *Olson, Kirsten A.*)

Lundal, Jennifer (California-Los Angeles): [13] (see *Hughbanks, Paul J.*)

Lundberg, Emily R. and Lind Sickler Robinson
[115] **Settlement Investigations at El Bronce, a Precolumbian Village in the Cerrillos Drainage, Puerto Rico**

The southern Puerto Rico site of El Bronce represented a village with successive precolumbian occupations. Research carried out in connection with the Cerrillos-Bucaná flood control project sought to investigate community functioning as revealed by the layout of postmolds, plaza stones, and other features. It also addressed the site's role within the wider contexts of resource areas, intercommunity contacts, and settlement hierarchy. This paper evaluates the Bronce evidence in the light of subsequent findings from other research in the region, which confirms some of the Bronce results while leaving other questions unresolved.

Lüning, Jens (Universität Frankfurt/M)
[81] **Economic and Social Structure of the Bandkeramik Culture in the Lower Rhineland/Germany**

During the 1970s, in the Merzbach Valley (Aldenhoven Plateau, Rhineland, Germany) large-scale surveys and excavations of a neolithic landscape were carried out. Particularly for the Early Neolithic (Bandkeramik culture), the analysis of several fully documented settlement plans is complete. Different distribution patterns of stones, pottery and botanical macrofossils at house and village level give quite unexpected insights into the structure of households, families and kinship, as well as interdependence through procurement of lithic raw materials and craft specialization.

Lycett, Mark T. (New Mexico)
[30] **Spatial Variation in Agricultural Landscapes: The Structure of Clusters in the Galisteo Basin, New Mexico**

Periodic, short term exploitation of areas around sedentary settlements results in multiple overlapping patterns of depositional accretion with artifact density and assemblage composition strongly influenced by redundancy in the use and reuse of locations. Under such conditions, fixed facilities provide focal points for activities, resulting in size biased ceramic assemblages. Using data recovered through distributional methods, this paper compares the spatial structure of ceramic distributions from high density artifact clusters associated with surface features to those without. The alternate states of artifact density and fragmentation associated with these facilities provide a means to address variability in occupational histories of locations within structurally complex landscapes.

Lyle, Robyn P. (Texas A & M)
[92] **Functional Analysis of Mimbres Ceramics from the NAN Run, Grant County, New Mexico**

The most common Mimbres vessel form, hemispherical bowls, are most often recovered from burial contexts, leading many early researchers to postulate a ceremonial function for the ceramic wares of the ancient Mimbres. In keeping with the recent trend of analyzing ceramics from a functional perspective, this paper relies upon four methods of functional analysis—morphology, context of recovery, ethnographic analogy, and use-wear—to answer questions about Mimbres household assemblages, ceramic morphological attributes, and use-wear patterns. It is determined that Mimbres ceramics fulfilled not only an ideological function, but social and technological functions as well.

Lyman, R. Lee (Missouri-Columbia): [38] (see *Butler, Virginia L.*)

Lynch, Thomas F. (Cornell)
[89] **Changing Adaptations to the Gran Despoblado of Northern Chile**

Postglacial environmental changes had marked effects in the internal drainage system of the Puna Negra and Atacama region. Occupation of this high, cold desert was marginal and conditioned by small changes in temperature, as well as precipitation and cultural capacity. Changing lake levels, glacial advance and retreat, changes in vegetation and fauna, and the archaeological settlement pattern itself are closely related in Holocene times. High lake stands may correspond with glacial retreat, higher temperature, and greater summer rainfall, before the onset of extreme aridity about 8500 to 5000 B.P. During the Late Archaic there was readaptation to saline lacustrine habitats, followed by pastoralism and mineral exploitation in late prehistoric and historic periods.

Lynch, Thomas F. (Cornell)
[49] **Inka Roads in the Atacama: Effects of Later Use by Mounted Travellers**
After brief use, the Inka roads of northern Chile were modified and rerouted to meet the needs of Spanish and Colonial expeditions. Some segments were unsuitable for horses and mules while

passable by foot travelers and llamas. Forage and water requirements differ for equids, camelids, and hominids. Spring recharges were often inadequate for larger parties; the longer jornadas of the Gran Despoblado were impossible for all but water-carrying humans. Parts of the "Inka Road," as known to travelers of historical times, are displaced from purely Inka segments that have been unused and preserved by their unsuitability for most later caravans and expeditions.
[116] Discussant

Lyons, Patrick D. (Arizona State Museum): [85] (see *Bubemyre, Trixi D.*)

Mabry, Jonathan (Center for Desert Archaeology)
[107] **New Light on Early Southwestern Villages**

Recent excavations in Tucson, Arizona uncovered remains of several early villages buried in a river floodplain. Occupied between 500 B.C. and A.D. 250, they represent the initial phases of agriculture and sedentism in the Southwest, and span the preceramic-ceramic transition. Large numbers of pit structures included houses, storerooms, and communal buildings. Subsistence remains reflect mixed farming, hunting, and fishing. Obsidian dart points and jewelry manufactured from Pacific coast marine shells and nonlocal minerals indicate long-distance exchange. A variety of stone tools, bone implements, and ceramic artifacts were found. Burials included inhumations and cremations. Later prehistoric canals cross the sites.

MacDonald, Doug (Washington State)

[133] **Mobility and Raw Material Use at the Hunting Camp Spring Site, Blue Mountains, Oregon**

This paper examines mobility and lithic technological organization of the inhabitants of the Hunting Camp Spring site in the Blue Mountains, northeastern Oregon, within the last 1000 years. Ethnographic information is used to suggest that long-distance kinship ties were secured to minimize subsistence risks. In addition, locations of lithic raw materials provide an "envelope" of space within which such trade or travel most likely occurred. Finally, I infer from results of lithic debitage analysis that these raw materials were used differently based upon proximity to the source.

MacEachern, Scott (Calgary)

[62] **Scale and Stylistic Variability: The Case of the Northern Mandara Mountains**

A fundamental problem in archaeological research involves establishing a relationship between artifact patterning and present human societies. The spatial bounds of the archaeological "cultures"—often defined through stylistic analyses—are often larger than those of present-day ethnicities. This is usually blamed on the limitations of fieldwork, under the assumption that our ultimate goal is the elucidation of ethnic groups as they are described (however problematically) in the "ethnographic present." Our lack of success at detecting such groups may involve limitation in anthropological conception of how social groups work rather than a failure of archaeological technique. These points are illustrated using examples from Central Africa.

Mack, Joanne M. (Pomona)

[133] **The Significance of Multiple-Floored Housepits in Upper Klamath River Canyon**

Within a twelve mile stretch of the Klamath River in southern Oregon and northern California, eighteen housepit villages have been identified. Limited excavation indicates all date from the late prehistoric period (A.D. 900-1800). This paper discusses the possible significance of multiple-floored housepits in some villages but not in others. The paper particularly addresses how these two housepit types relate to intensify of use and/or population growth over approximately a thousand year period. In addition, the two housepit types may also represent at least two different cultural groups living in the canyon.

Mack, Robert and David R. Yesner (both, Alaska-Anchorage)

[100] **The Aleutian "Transition Culture" and Aleut/Pacific Eskimo Origins: Evidence from Margaret Bay**

The "Transition Culture" in the eastern Aleutian Islands, dating from ca. 7000 to 4000 B.P., is known from sites on Umnak and Unalaska Islands which have been protected from mid-to-late Holocene sea level rise. It is characterized by a bifacial and unifacial lithic industry including large ovate bifaces and stemmed points, with some affiliation to similarly dated Ocean Bay industries from the Alaska Peninsula and Kodiak Island. Both the Transition and Ocean Bay cultures have some connections with earlier blade tool industries; the former contains blades and cores reminiscent of some Anangula materials, while the latter contains some microblades. Differences between the traditions, however, suggest that the antecedents of a common Aleut/Pacific Eskimo culture must be at least 7,000, and perhaps as much as 9,000 years old. New evidence from the Margaret Bay site on Unalaska Island (dated to 5500 B.P.) is used to illustrate this argument.

Manzanilla, Linda (Instituto de Investigaciones Antropológicas)

[90] **Sacred Geography and Ritual Behavior in Caves at Teotihuacan, Mexico**

Under one of the main urban developments of prehispanic times Teotihuacan, a series of tunnels which were formerly extraction mines for construction materials were further used for ritual practices, thus the concept of an underworld particularly related with Tlaloc emerges, recent data from an ongoing project headed by the author reveal ritual behavior related to sacred geography, 12 burials and 13 possible storage bin bottoms reveal practices related to the tlaloc cult and the earth's womb fertility rites.

Markantonatos, Marina (Texas-Austin)

[76] **Basilicata, South Italy: Elite Iron Age Women and the Power Game**

Two alternative theories explain the presence of tools and weapons found in Iron Age indigenous elite female burials in Basilicata, South Italy. Metal tools were functional and could have been used in domestic pursuits. But the ceremonial weapons and paraphernalia seen in some elite female burials indicate that elite women were able to attain positions of prestige and power within this culture in the sixth century B.C. This could be taken to signify that the positions of control were not limited to males. It is suggested here that elite females who possessed ceremonial weapons and paraphernalia, which are symbols of social and ritual power for men, may also have exercised such power within the indigenous Iron Age culture.

Marks, Anthony E. (Southern Methodist) and *Victor Chabai* (Institute of Archaeology, Ukraine)

[97] **The Middle and Upper Paleolithic of the Crimea: Continuity or Disjunction?**

This paper examines what is now known of Middle and Upper Paleolithic chronological and assemblage variability in the Crimea, with emphasis on the Late Middle Paleolithic and Early Upper Paleolithic. While the Crimea was densely populated during the MP, there is little evidence for Early Upper Paleolithic occupation. In fact, it now seems likely that some Crimean Middle Paleolithic lasted until, perhaps, 30,000 B.P., while the earliest evidence for the Upper Paleolithic may be as late as 24/20,000 B.P. This and other evidence indicate no developmental continuity between the MP and UP.

Marriott, Robert (National Park Service) and *Martin E. McAllister* (Archaeological Resource Investigations)

[80] **The Law Enforcement Workshop: Prosecution, Training, Interagency Cooperation, Information Sharing and Investigative Technologies**

The Law Enforcement Working Group at SAA's Save the Past for the Future conference, addressed five topics. The Prosecution Group discussed and evaluated ways to increase the number and quality of ARPA criminal and civil prosecutions. In the Training Group, current ARPA training programs were evaluated and new programs were suggested. The Interagency Cooperation Group addressed ways to enhance cooperation between the various agencies involved in the investigation of archaeological violations. Sharing information and criminal intelligence related to archaeological violation investigations was the subject of the Information Sharing Group. Finally, the Investigative Technologies Group discussed current and developing law enforcement technologies that can be utilized to enhance detection and investigation of archaeological violations.

Marris, M. Scott (Delaware): [87] (see *Johnson, Gerald H.*)

Martin, Debra L. (Hampshire)

[19] **Lives Unlived: The Political Economy of Violence Against Anasazi Women**

Data on osteological evidence for violence against Anasazi women suggest that some communities have higher frequencies than others. For example, the La Plata sample has unusually high rates (42%) of cranial trauma. Patterns of violence at sites from Mesa Verde, Chaco and Kayenta regions demonstrate variability in trauma, age-at-death, and health. One explanation that fits the patterns of violence involves the political economic context of violence against women in these settings.

Martin, Patrick E. (Michigan Tech): [98] (see *Martin, Susan R.*)

Martin, Robert A.: [64] (see *Hurst, W. Jeff*)

Martin, Susan R. and *Patrick E. Martin* (both, Michigan Tech)

[98] **Oldest Utilized Copper Deposit Tells All: Current Understandings of the Significance of Keweenaw Copper for North American Prehistory**

A variety of sources of native copper was utilized by people throughout North American prehistory, and its uses, users and extraction localities changed through time. In this light, it is prudent to establish what is known about the world's largest and perhaps longest exploited sources of native copper, the Keweenaw deposits of the Lake Superior Basin. Using Griffin's 1961 summary as a

starting point, this paper establishes what is currently understood about the prehistoric extraction and industry of the Keweenaw deposits. A model locating the Keweenaw sources within a regional use system is offered.

Maschner, Herbert D. G., Caroline L. Funk, and James W. Jordan (all, Wisconsin-Madison)

[100] **Paleoecology, Landscape Evolution, and Prehistoric Aleut Settlement Systems on the Lower Alaska Peninsula and Unimak Island**

Recent research at two sites, XCB-071 and Peterson Point, in Peterson Lagoon on Unimak Island have shown that occupation of these localities occurred under very different environmental conditions than are present today. Dense mussel midden at XCB-071, when no mussels are present either in the lagoon or anywhere near along the adjacent Bering Sea shoreline, indicates that the lagoon was an open embayment with a rocky shore at the time of occupation. The fact that the Peterson Point Site is on a remnant beach terrace now covered by dune sands suggests that dune formation, rapid lagoon infilling, and barrier island construction were products of a catastrophic event or rapid climatic change. These data have implications for explaining the apparent shift from dense prehistoric populations on the Bering Sea side of the lower Alaska Peninsula to early historic villages on the Pacific Ocean side of the peninsula.

Mason, Ronald J. (Lawrence): [51] Discussant

Masse, W. Bruce

[35] **Foment in the Firmament: Temporary Celestial Events and Culture Change in the Southwest**

Historical social science has long been interested in the role played by the physical environment in the maintenance and evolution of cultural systems. However, we have virtually ignored what was likely the most visually spectacular component of the physical environment for human cognition and cultural cosmology, that of naked-eye visible temporary celestial events. This paper utilizes the historic record of supernovae, novae, comets, meteor storms, eclipses, and planetary conjunctions between A.D. 150-1650, and apply these data to the study of change in the archaeological and iconographic record of the North American Southwest.

Masson, Marilyn (Texas-Austin)

[50] **Community Feasting Rituals and Postclassic Maya Village Political Structures: Evidence from Archaeofaunal Remains**

Courtyard rituals of the Postclassic Maya have been interpreted as village level transformations (writ small) of rituals enacted in monumental centers by Classic period elites. Spatial analysis of faunal remains and projectile points from Laguna de On, Belize suggests that butchering and perhaps was hosted at the residences of community leaders, along with other rituals promoting village solidarity. The control of hunting, butchering, and feasting was an important lever in the political economy of southern lowland Maya Postclassic communities. The articulation of animal use and political structures is reflected in the distribution of abundant faunal deposits associated with residences of this period.

Masucci, Maria (Drew)

[20] **The Nature and Identification of Marine Shell Working at Prehistoric Guangala Phase Sites in Southwest Ecuador**

Spatial analysis of artifacts at a Guangala Phase farmstead site in southwest Ecuador (100 B.C.-A.D. 800) is used to examine concentrations of materials associated with shell ornament manufacture. Analyses of similar concentrations at nearby contemporary surface sites contribute additional data to this examination of shell working activity areas and disposal patterns. The analyses suggest the debris represents remains of shell working activities organized at a household level. These data, therefore, aid the archaeological identification of shell working as well as contribute to an understanding of nature of organization of shell ornament manufacturing during this time period.

Mathews, James Edward (Field Museum of Natural History)

[65] **The Formative-Tiwanaku Period Transition in the South-East Titicaca Basin, Bolivia**

Recent archaeological surveys and excavations in the Tiwanaku Valley of Bolivia have begun to clarify our understanding of the sociopolitical and economic development of the Tiwanaku state's precursors in the region. This paper examines some of this evidence in the development of a model of economic patterns that permitted the emergency of Tiwanaku as the dominant polity in the south-central Andes between A.D. 400 and A.D. 900.

Matos M., Ramiro (Smithsonian): [49] Discussant

Mauldin, Raymond P. (New Mexico): [30] (see *Leach, Jeff D.*)

Mauldin, Raymond P. (New Mexico), *Daniel S. Amick* (Desert Research Institute, Reno), and *William C. Prentiss* (Frontier Archaeology)

[28] **Effects of Raw Material on Flake Breakage Patterns**
Differences in the mechanical properties of raw materials can exert significant influences on resulting patterns of flake breakage within a debitage assemblage. A recent technique of debitage analysis based on flake breakage categories (Sullivan and Rozen 1985) is used to demonstrate these effects in both archaeological and experimental situations. These cases demonstrate significant variation in flake breakage patterns that can be attributed to raw material differences. Therefore, attempts to use these breakage patterns to infer past human behavior or technological process must at least control for the effects of different raw materials.

Maxwell, David (Arizona)

[52] **Tikal and Uaxactun: A Comparison of Caches**
Recent glyphic research has revealed interaction between Tikal and Uaxactun. This interaction is usually interpreted as warfare, with Tikal emerging victorious. Further, the glyphic records suggest that a person from Tikal, Smoking Frog, was installed at Uaxactun as ruler. While glyphic data is most useful for providing insight into Maya political history, it should be tested with archaeological data. Caches provide a useful database for this purpose, given their often ritual nature. It is proposed that if Tikal did indeed defeat Uaxactun and install a new ruler, then Uaxactun caches dating after this event should show considerable similarity to those found at Tikal. Comparisons of cache locations and contents at the two centers may provide an archaeological perspective of this historical event.

McAllister, Martin E. (Archaeological Resource Investigations)

[29] **Let Your Fingers Do the Finding: Identification of Artifact Dealers Using the Yellow Pages**

A method has been developed to identify prehistoric and historic artifact dealers based on listings in the yellow pages of telephone directories. This paper outlines the steps involved in the dealer identification process and describes the application of the method in a project designed to locate Alaskan and Arctic artifact dealers in 16 cities. The project successfully identified not only the targeted category of dealers, but also dealers trading in other types of prehistoric and historic artifacts in these cities.

[80] (see *Marriott, Robert*)

McAnany, Patricia A. (Boston): [50] (see *Angelini, Mary Lee*)

McAndrews, Tim (Pittsburgh)

[99] **Tiwanaku Core and Periphery Regions: A Settlement Pattern Approach**
At its height, Tiwanaku was at the top of a multitiered settlement hierarchy with large secondary centers of urban proportions, supported by a hinterland economy based on raised field agriculture and camelid pastoralism. Beyond its hinterland, Tiwanaku maintained ties with distant regions in Bolivia, Chile, Argentina, and Peru. This study presents the Tiwanaku settlement pattern data collected by the Moquegua Archaeological Survey, and offers preliminary analyses and interpretations of the settlement system in the valley. Using Albarracin-Jordan and Mathews' published settlement pattern data for the Tiwanaku Valley permits comparison of the settlement patterns of the Tiwanaku and Moquegua valleys in order to shed light on the nature of contact between Tiwanaku core and periphery regions.

McAvoy, Joseph M. (Archaeological Society of Virginia): [87] (see *Johnson, Gerald H.*)

McCafferty, Geoffrey G. (Brown): [23] (see *McCafferty, Sharisse D.*)

McCafferty, Geoffrey G. (Brown) and *Sergio Suarez Cruz* (INAH-Centro Regional de Puebla)
[26] **The Classic/Postclassic Transition at Cholula: Recent Investigations at the Great Pyramid**
The cultural sequence during the Classic to Postclassic transition at Cholula (Puebla, Mexico) has been a source of confusion due to an apparent contradiction between archaeological and ethnohistoric sources. Recent excavations at the Patio of the Carved Skulls on the northeast platform of the Great Pyramid provides new evidence to reinterpret this transitional period. Preliminary evidence indicates extensive construction of a series of elite residences during the Epiclassic period. Ceramics and architectural features from the patio are compared with other areas of the Cholula ceremonial center and other sites from Central Mexico to reevaluate the culture history of Cholula and its impact on Postclassic Mesoamerica.

McCafferty, Sharisse D. and *Geoffrey G. McCafferty* (Brown)

[23] **Weapons of the Weak?: Spinning and Weaving Tools in Postclassic Mexico**
Studies of dominance and resistance have revealed that a common strategy among disempowered groups is to subvert aspects of the dominant identity as an act of resistance. In Postclassic Mexico, militarism was one of the principle aspects of male identity, with weapons such as spears, swords, and shields given to young boys as tokens of their gender. In contrast, female identity was stereotypically represented through tools used in spinning and weaving activities. In this paper we discuss the ritual use of spinning and weaving implements as symbolic weapons in sacrificial rites, divination, birth ceremonies, and as evocations of the Mother Goddess complex. Was this an attempt to emulate male power structures, or to mock them while expressing a structural equivalent?

McClung de Tapia, Emily (Universidad Nacional Autónoma de México) and *Horacio Tapia-Recillas* (Universidad Autónoma Metropolitana-Iztapalapa)

[82] **GIS Technique Applied to Studies of Settlement Location in the Teotihuacan Region, Mexico**

Traditional and directional statistical techniques are applied to regional settlement data from the Teotihuacan region in the context of a GIS database. Changes in site locations with respect to environmental features including soil and vegetation types, distance to water, elevation, slope and aspect are considered over approximately 2500 years, from the initial settlement of the region by agriculturalists until the Spanish Conquest in the 16th century. Statistically significant associations do not appear until urban communities are established during the Classic period. Population trends related to sociopolitical and economic factors do not seem to have much of an effect on the location of settlements after the decline of urban Teotihuacan ca. AD 750.

McCormack, Valerie (Pittsburgh): [130] (see *Dahlin, Bruce H.*)

McCorriston, Joy (Minnesota)

[84] **Linseed, Linen, Labor, and Land: Neolithic Roots of Social Differentiation**

The labor spent in generating linen textiles was a significant component in economic and social developments in the Near Eastern early Neolithic. Flax, probably domesticated for linseed, subsequently provided Neolithic farmers with an unprecedented source of fiber for textiles. Ethnographic and historic records generally link surplus textiles to social and political negotiations as such textiles are bestowed, exchanged, and displayed. Current models suggest that labor engaged in surplus linen production could be exchanged for food or for other markers of status and social differentiation. The economics of early weaving imply that it is the latter that would have characterized the first weaving communities in the Near East.

[95] (see *Monckton, Stephen G.*)

McCulloch, Tom (Advisory Council on Historic Preservation): [25] Discussant

McCullough, David L. (Army Corps of Engineers)

[115] **Historic Preservation Investigations at the Cerrillos Dam and Lake: an Overview**

The U.S. Army Corps of Engineers, in cooperation with the Puerto Rico State Historic Preservation Officer, recognized that significant historic properties would be affected by construction of Cerrillos Lake. In compliance with Federal and Commonwealth laws, a series of archeological and historical investigations were completed which document and preserve the cultural record of this region and address pertinent research questions posed in the context of a regional research design. In this paper, the background and history of the investigations is reviewed, the content of the research design is summarized, and the results of these investigations are introduced.

McCutcheon, Patrick T. (Washington)

[22] **Evolutionary Fitness of Stone Tool Heat-Treatment Technology**

Nearly sixty years of research has demonstrated that stone tool heat-treatment was practiced in prehistory and that it has a discontinuous, global distribution. While explanations for this distribution focus on thermally induced increases in "workability," the effects of heat-treatment on tool performance or the ability to produce new tools receive only cursory attention. For heat-treatment technology to persist advantages gained in stone tool production and/or use must outweigh losses incurred during production and use. This paper presents a model to explain the fitness of stone tool heat treatment over a 1000 year period in southeast Missouri.

McElrath, Dale (Illinois-Urbana/Champaign)

[59] **Defining Archaic Cultures in the American Bottom**

The development of a fine-grained culture chronology for the latter half of the Archaic period in the American Bottom has provided insight into the extent of population interactions and movements in the midcontinent during this period. Based on the archaeological record, several distinct cultures can

be identified. Inferences about the mechanisms for culture change during the Archaic will be drawn, and speculations concerning the patterns of population movement will be offered.

McFaul, Michael (Laramie Soils Service)

[105] **Geoarchaeologic and Paleoenvironmental Model: Kersey Terrace, Kersey, Colorado**
Radiocarbon dated soil-sediment records are employed to reconstruct Kersey terrace paleoenvironments and geoarchaeologic potentials. The Kersey fill is correlated with late Pleistocene-early Holocene climatic events. Older Paleoindian sites (11500-10000 B.P.) are associated with paleo-channel banks and bars and younger Paleoindian sites (< 10000 B.P.) are located on terrace margins near the river. An associated of Clovis components with both Kersey alluvium and adjacent eolian dunes indicates that eolian deposition began prior to 11,000 B.P. and implies that sediment availability influenced early Holocene eolian deposition. Paleoindian sites are not as abundant on the Kersey terrace as previously proposed.

[70] (see Haynes, C. Vance)

[105] Discussant

McGimsey, Charles R. (Southern Illinois-Carbondale): [104] (see Wiant, Michael D.)

McGovern, Thomas H. (Hunter)

[101] **Dogs, Doors, and Death: Climate Impact at Sandnes, Norse Greenland**
Scandinavian colonists settled the fjords of west Greenland ca. 985, during a generally warm climatic period. They established a medieval society in Greenland, with stone cathedral, monastery and nunnery. Later Norse society in Greenland may have become increasingly hierarchical, dominated by secular and religious elites controlling the pasture needed for domestic stock. Contact with Thule Inuit after ca. 110 failed to spur technological innovation among the Norse, and climatic cooling after A.D. 1300 placed increased stress on the Norse economy. Recent analyses of excavated Norse sites around the elite center Sandnes indicate a sudden collapse of the settlement and shed light on the final days of the colony.

[63] Discussant

McHargue, Georgess (Timelines, Inc.)

[108] **The Marlboro Bear Skull and the Charlestown Cat, or Let's Not Forget Why the Public Likes Archaeology**

Writers of popular archaeology should not sensationalize, but new findings, reassessments, and surprises are always going to be more interesting than fulfilled predictions and purely statistical data. The most appealing part of any excavation will probably be the human element. Doing writer-friendly archaeology involves forethought. Before finishing the field report, think about graphics, printing, and reproduction. Camera-ready vs. copy-ready. Professional design. Where to find a writer (hint: not at the local college). If you work with a professional writer, what are your obligations? Archaeologists are not writers, and shouldn't have to pretend they are.

McHargue, Jan (California-Berkeley)

[62] **Technological Variation in Maya Relief Sculpture**
Due to the types of stone most readily available and to decisions about physical placement of monuments, Maya stone craftsmen experimented with and made choices about which kinds of techniques of representation and carving were most effective. The concept of a community identity can be interpreted from the distinctive carving styles that developed at three different Maya cities (i.e., Yaxchilan, Palenque and Copán) as a result of these technological choices. These styles then further served to reflect, reinforce, and maintain political and social identities as one part of an expressive system of communication between Classic period Maya population units.

McIntyre, Roberta (Montclair State): [13] (see Walling, Stanley L.)

McJilton, Charles (Delta Environmental Center)

[7] **The Health and Safety of Archaeology**
Past human mistakes have left hidden dangers buried in the ground. These may be chemical or physical in nature and require an informed preventive strategy to minimize the risk of injury. Abandoned pesticides, waste solvents, deposits of heavy metals, even lost radioactive sources are all possible hazards that could be encountered. Industrial hygienists have developed procedures to identify hazards and minimize risk of injury. Certain situations may be covered by an OSHA regulation, such as confined space entry.

McKillop, Heather (Louisiana State)

[61] **Modeling Classic Maya Settlement and Sea Level Changes in South Coastal Belize**
Regional survey to investigate coastal Maya systems of import, export, and regional distribution has

revealed new information on ancient sea level changes and settlement patterns. That the coastal area virtually lacks modern settlement in favor of mangrove swamps was not a deterrent to the Classic Maya: a sea level rise is documented by excavations at 12 Classic sites that are either underwater, below the water table on land, or deeply buried beneath mangroves. Settlement locations, stratigraphic profiles, radiocarbon dates, archaeobotanical remains, and remote sensing data are evaluated to document the sea level rise and predict land available for ancient settlement.

McManamon, Francis P. (National Park Service)

[134] **The Paleoindian Project and the National Park Service Archeological National Historic Landmark Initiative**

Begun as a partnership project between the National Park Service Archeological Assistance and History Divisions, the Archeological National Historic Landmark (NHL) Initiative has resulted in the identification, evaluation, and designation of nearly fifty new archeological NHLs since 1988. Working together with State Historic Preservation Offices and other preservation partners, Archeological Assistance Division staff have used the NHL theme study framework as a systematic and contextual framework for many of these designations. The recently begun Paleoindian theme study represents the first nationwide effort of its type since the completion of the first series of archeological theme studies in the early 1960s.

[29] Discussant

[80] Discussant

McMillan, Garnett P. (New Mexico)

[10] **An Examination of Some Archaeological Assemblage Distance Measures**

Distance measures that estimate assemblage similarity are commonly applied in the initial phase of seriation research. It is therefore important to consider the appropriateness of these measures. This paper examines the assumptions required by four distance measures: Brainerd-Robinson's coefficient, Euclidian Distance, Mahalanobis Distance, and Pearson's chi-square. Each is evaluated on theoretical grounds and relative to the kinds of data archaeologists typically use. It is concluded that the Pearson's chi-square is the best measure where mutually exclusive categorical data are used, and that the Mahalanobis Distance is best where nonmutually exclusive and combinations of data are used.

Mear, C. E. (Texas-Austin): [9] (see Collins, Michael B.)

Meatle, Daniel (Washington State Parks)

[135] **Ochre**

Archaeologists throughout the world have recognized the use of ochre as a pigment for rock art and as a colorant imbued with symbolic meaning. The artworks of Lascaux Cave and the Triple Czech burial at Dolni Vestonice are two outstanding examples. Yet, archaeologists often find ochre in contexts that preclude common interpretations of artistic or ceremonial behavior. This paper will summarize evidence for several utilitarian uses of ochre. Specifically, ochre served as: 1) a preservative in protecting hides from decomposition, 2) a waterproofing agent for leather clothing and housing covers, 3) an abrasive for strengthening stone tool edges and 4) as an insecticide.

Mehrer, Mark (Northern Illinois)

[120] **Initial Late Woodland Domestic and Community Planning in Northern Illinois**

An early Late Woodland occupation has been excavated at a large site along the middle Rock River in northern Illinois. Communal structures and household clusters with domestic shelters and work space activity areas give an indication of the settlement's social organization. Information regarding domestic settlements and communities from this period is rare and this new evidence of community planning sheds light on the social transformations manifested with the shift from Middle Woodland to Late Woodland.

Mercado-Allinger, Pat (Texas Historical Commission)

[24] **State Archaeology Weeks**

An important aspect of archaeological site preservation is public outreach. Since the early 1980s various states have embraced the "State Archaeology Week" approach as a way to focus the public's attention on the significance and fragility of archaeological resources. While the goal of public education is to encourage year-round archaeological awareness, archaeology weeks provide a focal point for special events including lectures, exhibits, tours, and demonstrations. The variety of state programs includes a state that has sponsored its first observance to those that have had extensive experience with this form of public outreach.

Meltzer, David J. (Southern Methodist): [36] Discussant

Mertens, Steven (Illinois-Urbana/Champaign)

[97] **The Aurignacian and the Early Upper Paleolithic in Romania**
Recent publications have proposed an association between the spread of fully modern humans in Europe and the Early Upper Paleolithic technocomplex known as the Aurignacian. Unfortunately, these studies rely exclusively on data from western Europe. Aurignacian lithic assemblages have been described from Early Upper Paleolithic sites in Romania. These assemblages do not, however, fit the traditional definition of the Aurignacian as it is known from western Europe. This paper will discuss the current state of knowledge concerning the Early Upper Paleolithic in Romania and whether these assemblages are representative of the Aurignacian technocomplex.

Metcalfe, Mary P. (Virginia)

[118] **Political Organization and Access to Resources in the Prehistoric Northern Southwest, A.D. 1000-1300.**

The political organization of the prehistoric pueblos, including the degree of intrasite hierarchy, continues to be an area of debate. Within non-state level groups hierarchy is based on privileged access to some things, including material goods and esoteric knowledge. This research will consider the implications of variation in access to these resources. The location of storage facilities and civic spaces (specifically kivas and towers) will be examined using centrality indices, Konig numbers, and depth and accessibility indices. Data from the Chaco Canyon and Mesa Verde regions between A.D. 1000 and 1300 will be used.

Michlovic, Michael G. (Moorhead State)

[120] **An Early Archaic Site on the Northeastern Plains**

The Rustad Site (32R1775) is an Early Archaic period site along the Cheyenne River in North Dakota. Radiocarbon dates bracket at least two occupations between 7700-7100 radiocarbon years B.P. Preliminary study indicates a heavy use of bison, complemented by small game, use of lithic materials from the western Plains and from the northwestern Minnesota woodlands, and a small projectile point technology indicative of a weapons system not widely recognized for this period in North American culture history. These finds improve our understanding of human use of the Plains environment during the Atlantic climatic episode.

Middleton, William D. (Laboratory for Archaeological Chemistry)

[86] **Microdebitage Evidence for the Organization of Production at the Ejutla Site**

Microdebitage analysis was conducted on sediment samples from each excavation unit of the Ejutla structure. These analyses demonstrate that both shell and lithic production were occurring within the structure and suggest that greenstone may also have been worked. The microdebitage also indicate that while there was a single general work area within the structure, obsidian and chert as well as greenstone and marine shell appear to have been worked/used at separate loci within it. This suggests that production at the Ejutla structure was well organized with specific tasks being allocated their own work area within a larger formal workspace.

Mikkelsen, Peter Hambro (University of Aarhus): [128] (see *Robinson, David Earle*)

Miksicek, Charles H. (BioSystems Analysis)

[109] **Prehistoric California—A Testing Ground for Our Models of the Origins of Agriculture**
Archaeobotanical data collected from various California sites suggest that the plant food contribution to subsistence was far more diverse than the acorn-based diet predicted from late 19th century ethnographies. A complex of grasses (little barley, maygrass, ryegrass), legumes (*Lotus*, clover, lupine), and small seeds (goosefoot, chia, tarweed) is present in sites throughout California. This "grass-legume-small seed complex" has strong parallels with archaeobotanical data from sites in eastern North America and Early Neolithic sites in the Near East. Several of these taxa demonstrate morphological changes that suggest some degree of selection or environmental management beyond the simple gathering of a "wild plant." These data suggest that pre-Contact California could prove to be an important testing ground for many models for the "Origins of Agriculture."

Miller, Gifford H. (Colorado)

[96] **Persistent Aridity Across the Australian Interior Resulting from Human-Induced Late Pleistocene Vegetation Change**

The Lake Eyre Basin, a monsoon-dominated interior-drained basin covering one-sixth of the Australian continent, preserves a record of wet intervals, characterized by sustained stream flow and permanent lakes, and intervening aridity, with accompanying substrate destabilization and massive erosion. Recent field studies and improved dating techniques have allowed reconstruction of wet intervals for the past 150 k. Milankovitch-driven changes in the intensity of the Asian winter monsoon explain most of the variations in moisture balance over the Basin, but a predicted early Holocene wet interval is not observed. Failure of the early Holocene monsoon is hypothesized to

result from widespread vegetation change brought on by systematic burning by the earliest human immigrants beginning 50-60 k ago.

Miller, Harry (U.S. Army, CERL): [72] (see *Zeidler, James A.*)

Miller, Heidi J. (Harvard)

[12] **Tyranny of a Label: Bronze Age "Seals" of the Harappan Civilization**

Seals, sealings and texts from Mesopotamia demonstrate the economic and administrative functions seals and writing played in the past. The inscribed objects of the Harappan Civilization have been labelled seals and consequently been interpreted within the same economic paradigm, however, without supporting evidence. The paradigm inherent in the label "seal" has overshadowed noneconomic interpretations of objects from the Indus valley as well as Mesopotamia downplaying their alternate roles, for example, as amulets or social markers. Additional views, obscured by how we label objects, must be pursued in order to understand the full range of roles inscribed objects and writing may have played in past societies.

Miller-Antonio, Sari (California State-Stanislaus), *Huang Weiwen* (Institute of Vert. Paleontology and Paleoanthropology, Beijing), *Si Xingiang* (Cultural Relics Management Committee, Guizhou Province, China), and *Lynne Schepartz* (Cincinnati)

[119] **Excavations at the Stratified Cave of Panxian Dadong, Guizhou Province, Southern China**

Panxian Dadong (*Panxian* means "Grand Cave") is a recently discovered stratified cave located in the Karst topographic region of the western Guizhou Plateau. During two initial field seasons in 1992 and 1993, 92 m² out of the existing 8000 m² of cave deposits have yielded fragmentary remains of over 40 species of mammalian fossils, more than 2000 stone artifacts, evidence for use of fire and one fragmentary hominid tooth. *Panxian Dadong's* potential as a Paleolithic site, its chronology, and the interpretation of the archaeological materials within the greater context of East Asian prehistory will be discussed.

Miller, Virginia (Illinois-Chicago)

[114] **Smoking Mirror at Chichen Itza**

Although considered a central Mexican deity, Tezcatlipoca is first represented in Mesoamerica not at Tula but at Chichen Itza. Several reliefs depict warriors with a severed leg terminating in a smoking mirror, while another shows a serpent-footed figure who does not appear to be the Maya God K. While these images are far less common than the ubiquitous feathered serpents at the site, their existence suggests that some version of the Toltec myth regarding the epic struggle between Quetzalcoatl and Tezcatlipoca was known there. The place of these Tezcatlipoca impersonators within the political structure and belief system of Chichen Itza will be examined.

Mills, Barbara J. (Arizona) and *T. J. Ferguson* (Institute of the North American West)

[85] **Tempo and Mode in the Life Histories of Domestic Architecture: An Ethnoarchaeological Approach**

Buildings are continually transformed through the activities of construction, repair, reconstruction, reuse, and deconstruction. The metaphor of life history is applied ethnoarchaeologically to describe the behavioral events leading to the form of domestic architecture as recorded archaeologically. Harris matrices are used to summarize the sequence of events evident in standing structures at Zuni farming villages. Variation in the tempo and mode of events between structures is then compared to understand how the life histories of buildings are patterned by factors such as structure use, the domestic cycle, duration of site occupation, and abandonment processes.

Milner, Claire McHale (Pennsylvania State): [104] (see *Neusius, Sarah W.*)

Milner, Claire McHale (Pennsylvania State) and *John M. O'Shea* (Michigan)

[104] **The Changing Role of Earthwork Enclosures During the Woodland Period in Michigan**

The traditional assumption that Michigan earthwork enclosures served a defensive or ceremonial purpose is not consistent with these sites' internal features or materials, nor can they account for the distribution of the earthworks across the physical and social landscape. Rather, the enclosures played a persistent role in the social demarcation of the landscape and the integration of regional populations. The specific function changed throughout the Woodland Period from that of a seasonal ritual focus for Early and Middle Woodland dispersed foragers to that of a neutral trade rendezvous locality placed at boundaries between major Late Prehistoric social divisions.

Milner, George R. (Pennsylvania State): [19] Discussant

Miracle, Preston and Tracey Crummett (both, Michigan)

[97] **Just Who Were Those "Aurignacians?" Vindija's Place in the Central European Early Upper Paleolithic**

The position of Central Europe on the corridor linking the Near East and the rest of Europe makes it critical to our understanding of the emergence of European Early Upper Paleolithic industries. The Croatian site of Vindija poses a particular problem in understanding the EUP of the region because of what appears, given common preconceptions, to be an unexpected hominid-industrial association. After placing Vindija in its geographical, archaeological, and historical context, we address three questions. First, is the industry at Vindija "Aurignacian?" Second, which hominids are associated with this industry? Finally, what are the behavioral implications of this association?

Misdea, Sharon (Montclair State): [13] (see *Walling, Stanley L.*)

Mitchem, Jeffrey M. (Arkansas Archeological Survey)

[120] **Investigating the Mississippian Palisade and Protohistoric Houses at the Parkin Site, Northeast Arkansas**

Excavations at the Parkin site in the summer of 1994 had two main objectives: to further investigate the defensive palisade and to continue exposing a protohistoric structure and associated features. Both of these areas had been partially excavated in 1993. The palisade research uncovered stockade postholes and part of a probable bastion or guardhouse. Continuing excavations in part of the village exposed a well-preserved fired clay floor and led to the identification of the doorway.

Mitchum, Beverly A. (Pennsylvania Historical and Museum Commission)

[80] **Networks for Archaeological Education**

The goal of the Network subcommittee of the Education Work Group of the Save the Past for the Future Conference was to expand and develop a network for the exchange and dissemination of information and ideas related to archaeology and education. The network is the delivery system for public education information. The conference work group developed action items in three areas: 1) formalizing the role and responsibilities of the network; 2) expanding the network to reach additional public especially private landowners who control 65% of the land and archaeological resources in the country and 3) expanding the network as a delivery system through the exploration of those new technologies which comprise the information superhighway.

[94] (see *Cackler, Paul*)

Mitchum, Beverly A. (Pennsylvania Historical and Museum Commission) and *Kathryn Reese-Taylor* (Texas-Austin)

[94] **Investigations of a Small Structure in the Monumental Center at Cerros, Belize**

The site of Cerros in Northern Belize has been well documented as the major Late Preclassic center in the region. Previous investigations have examined large monumental constructions, special function structures such as ballcourts, and residential structures in the surrounding dispersed settlement. Excavations during the summer of 1994 in a small structure in the monumental center investigated the function of one of these small buildings (Structure 5E). This paper examines the evidence for the identification of this structure as an elite residence during the Late Preclassic and for its reuse during the brief Terminal Classic occupation of the site.

Mobley-Tanaka, Jeannette (University of Colorado Museum) and *Janet L. Griffitts*

[30] **Residues Seen on Prehistoric Bone Tools Under the Microscope**

The analysis of prehistoric residues on stone tools has yielded interesting and sometimes controversial results in recent years, but few other artifact classes have been examined in similar ways. In preliminary examinations of bone tools from several sites in the southwestern U.S., various residues have been observed using both high magnification incident light and scanning electron microscopy. A description of the residues will be provided, as well as a discussion of what they represent and how they relate to bone tool use. Aspects of polish, staining, or wear patterns that correlate with residues will be discussed.

Mock, Shirley Boteler (Texas-Austin)

[64] **Monkey Business at NRL: Core-Periphery Exchange and Ideological Spheres in Northern Belize**

Recent evidence from coastal sites in Belize has resulted in a broadening of our understanding of cultural adaptations during the Late Terminal Classic Period (A.D. 670-900) in the southern Maya Lowlands. One of these coastal settlements, Northern River Lagoon (NRL), although on the fringes of Maya society, was actively involved in specialized saltmaking, fish processing/preservation, and intra-interregional exchange to allay resource imbalances at inland communities. Using a core-periphery framework this paper uses data from NRL to explore economic, ideological, and political connections to one of these communities, Colha. Of particular significance to this study is the

restricted distribution of large homologous polychrome plates with monkey designs.

Moeller, Konnie L. (Argonne National Laboratory): [135] (see *Malinowski, Lynn M.*)

Moeller, Konnie L. and John Hoffecker (both, Argonne National Laboratory)

[136] **Historical Geomorphology and Archaeological Survey Strategy: Applications in Cultural Resources Management**

An "applied geomorphology" approach was employed in the design of archaeological field surveys for two U.S. Air Force bases in widely differing landscape settings: McChord AFB (Washington) and Andrews AFB (Maryland). McChord AFB occupies an area of morainal ridges and outwash flats dating to the Late Glacial, while Andrews AFB lies on an eroding plain of unconsolidated Tertiary deposits. Sampling strategies were developed through application of local and regional historical geomorphology, including the history of human land disturbance, in each setting.

Moffat, Charles R. and Robert F. Boszhardt (both, Mississippi Valley Archaeology Center)

[33] **Sand County Prehistory: The Late Woodland Settlement of the Central Wisconsin River Drainage**

Recent surveys and test excavations around Castle Rock and Petenwell Flowages in central Wisconsin have identified numerous Late Woodland campsites related to the Effigy Mound tradition. Many sites are aligned with abandoned meanders of the Wisconsin and Yellow rivers and are common along the edges of late Pleistocene and early Holocene terraces. Isolated mounds or mound groups occur near some sites. Late Woodland sites typically yield Madison Cord-Impressed, Madison Plain and net-impressed ceramics. Lithic assemblages are composed largely of orthoquartzite artifacts and include a distinctive serrated variant of the Madison triangular point type.

Moffitt, Kyle (California-Riverside): [43] (see *Prior, Christine*)

Moholy-Nagy, Hattula (Tikal Project)

[20] **Contexts of Shell Artifact Production and Consumption at Tikal**

Debitage recovery contexts provide useful data about the production and consumption of shell artifacts at this important Maya city. Tikal commoners wore ornaments made of white marine shell and freshwater mussels, while ornaments and ritual objects of red *Spondylus* and nacreous pearl oyster shell are associated with the elite. The disposal contexts of production waste appear to have been primarily determined by the kind of shell. Shells used by commoners were disposed of on the artisans' household middens. But from Early Classic through Intermediate Classic times (ca. A.D. 250-700) nearly all *Spondylus* debitage was buried in monument and structure caches.

Monaghan, John (Vanderbilt)

[50] **Feasting in Mesoamerica as a Total Social Phenomenon**

Ethnographic accounts of Mesoamerican feasting have concerned themselves with fiesta sponsors and the consequences different methods for financing fiestas have for community organization. This focus has obscured the fact that the feast is a meaningful activity for all participants, being a "total" social phenomenon with a variety of functions. Using ethnographic and historical materials from the Mixteca, this paper examines the role the feast played in the ancient tribute system, discusses its linkage to marriage alliance, and illustrates the way a specific image of society is created through the exchanges that take place within it.

Monahan, Christopher M. (Smithsonian)

[16] **Early Hominid Foraging Behavior in the Lower Pleistocene: Scanning Electron Microscopy of Bed II (Olduvai) Archaeofauna**

Scanning electron microscopy (SEM) of archaeofaunas from Bed II, Olduvai Gorge (-1.7-1.2 mya), is used to test the author's macroscopic identification of surficial modifications. The distribution of hominid butchery and percussion marks by animal size and anatomical location confirm test implications derived from the "multiple place foraging" (MPF) model of early hominid behavior. MPF, a flexible, highly mobile and nonspecialized approach to resource acquisition, is contrasted with other models of emerging hominid carnivory. Particularly in contrast to other Lower Pleistocene sites, the Bed II data reflect significant variability in the behavior of early *Homo erectus*.

Monckton, Stephen G. (Royal Ontario Museum), *Anita Buehrle* (GYRA-Toronto), and *Joy McCorriston* (Minnesota)

[95] **Environmental Trends at the End of the PPNB: Feast or Famine?**

Over the past 25 years, various researchers have sought to explain PPNB abandonment and apparent discontinuity with the Late Neolithic as a result of environmental degradation. New botanical evidence from the Wadi Ziqlab and elsewhere allow us to question this interpretation.

Monger, H. Curtis (New Mexico State): [30] (see *Leach, Jeff D.*)

Montet-White, Anta (Kansas): [16] (see *Banks, William E.*)

Montgomery, Barbara K. (Statistical Research): [85] (see *Reid, J. Jefferson*)

Moore, Andrew M. T. (Yale): [95] Discussant

Moore, James (Queens): [102] Discussant

Moore, Katherine M. (Bentley): [77] (see *Hiebert, Fredrik T.*)

Moratto, Michael J. (INFOTEC Research): [48] Discussant

Morgan, Kim (Vanderbilt): [52] (see *Demarest, Arthur*)

Morris, Craig (American Museum of Natural History)
[125] **Patterns of Inka Imperial Rule in Three Provinces**

One of the hallmarks of Inka imperial rule was flexibility. There were underlying principles of conquest and control in the empire's diverse areas, but strategies of rule differed depending on the natural resources, the extent of sociopolitical centralization and the degree of resistance to the Inka in the incorporated regions. The paper compares results of archaeological research in the Peruvian central highlands, the south-central coast of Peru, and the eastern Bolivian Andes. The patterns of native empire based on understanding varying local social and economic conditions contrast sharply with European imperial practices introduced after 1532.

Morrison, Kathleen D. (Northwestern)

[96] **Terracing and Erosion in the Dry Zone of Southern India: Landscape Changes and Choices**

The contemporary degraded environment of interior southern India appears to be the product of discontinuous episodes of change associated with periods of high population density. I discuss results of preliminary excavations and sediment analyses from a precolonial agricultural terrace/reservoir complex and consider the role of terracing in overall efforts to control soil movement on and below terraced hillsides. Studies of a range of facilities suggests that some terraces were constructed as part of larger-scale strategies of soil control, implying that the economic and organizational implications of terraced agriculture may not be explicable apart from consideration of entire landscapes.

Morrow, Juliet E. (Iowa)

[28] **Endscraper Morphology and Use-Life: An Approach for Studying Paleoindian Technology and Mobility**

This paper presents an approach for monitoring changes in endscraper morphology and maintenance. Metric attributes are used to document degrees of resharpening and exhaustion for a series of endscrapers from Paleoindian sites in the Mississippi-Illinois River valley region. Striking platform attributes are used to identify various technological steps in core/biface reduction that yielded blanks for scrapers. Plotted against distance from raw material source area, these metric and morphological attributes provide insight into Paleoindian technological organization and mobility.

Morrow, Toby (Iowa)

[28] **A Chip Off the Old Block: A Systematic Approach to Debitage Morphology**

Each flake carries traces of the morphology of the piece from which it was derived. However, most systematic (and replicable) approaches to debitage analysis do not monitor important aspects of flake morphology. In the analytical system presented here, nonmetric attributes of striking platforms and dorsal flake scars are coded along with general size grade. These observations yield a numerical code describing flake morphology that can readily distinguish aspects of reduction stage and flaking techniques. More importantly, however, this approach can be used to identify distinct patterns in reduction strategy and even differentiate the byproducts of making specific tool forms.

Morton, Susan D. (National Park Service)

[29] **Alternatives for Controlling Illegal Trafficking in Antiquities: A Report to the U.S. Congress**

The illicit looting and smuggling of archeological material to supply the international antiquities market has continued to explode as antiquities bring a spiraling price on the international market. The national and worldwide commodification of our archeological heritage and resource base has had devastating consequences for the record of the human past. This paper summarizes a report commissioned by the U.S. Congress to study the illicit traffic in antiquities and make

recommendations for controlling the illicit trade.

Moscoloni, Maurizio (Università "La Sapienza," Rome): [76] (see *Cazzella, Alberto*)

Motsinger, Thomas N. and *Mark L. Chenault* (both, SWCA, Inc.)

[118] **Stockaded Basketmaker Sites in the Mesa Verde Region**

Recent excavations in the Mesa Verde region of southwestern Colorado have demonstrated that a sizable proportion of Anasazi habitation sites dating to the Basketmaker III period were surrounded by stockade-style enclosures. In this paper, we review the essential attributes, spatial distribution, and temporal patterning of stockaded sites in the region. These data are brought to bear on possible functions of stockades and the sociocultural mechanisms that may have precipitated their appearance.

Mueller, Raymond G. (Richard Stockton) and *Arthur A. Joyce* (Vanderbilt)

[82] **Middle/Late Holocene Landscape Change and Settlement Dynamics in Oaxaca, Mexico**

This paper reports the results of interdisciplinary research on the interaction of landscape change and demography within the Rio Verde drainage basin. Sedimentological research in the Oaxacan highlands and lowlands has provided evidence for two periods of geomorphic change. The first occurred in the mid-Holocene with a shift toward increased precipitation and land surface instability. The second involved landscape degradation in the highlands due to Late Formative agricultural expansion which triggered lowland alluviation. We discuss how these geomorphic changes may have effected settlement patterns and demography in the highlands as well as the coastal lowlands.

Muenich, Elizabeth: [94] (see *Rich, Michelle E.*)

Mulholland, Susan C. (Minnesota-Duluth)

[131] **Activities at a Brainerd Habitation: The Phytolith Evidence**

The Roosevelt Lake Narrows Site in Cass County, Minnesota, contains a Middle Woodland (Brainerd) habitation. Material remains include abundant ceramics, lithics, and bone. Sediments sampled on a ¼-meter grid across 12 square meters of a living floor were tested for phytolith content. In addition, two columns were sampled by natural stratigraphy from 0 to 50 cm. The results when compared to the artifact distribution provide a test for determination of activity areas.

[51] (see *Peters, Gordon R.*)

Mulholland, Steven (Superior National Forest): [51] (see *Peters, Gordon R.*)

Muller, Jon (Southern Illinois)

[18] **Historic and Mississippian Population Stability**

Studies of prehistoric Mississippian and historic Native American population and population dynamics indicate the possibility that Mississippian and historic Southeastern populations were more alike in structure than is commonly supposed. Moreover, simple models of population structure suggest that the "decline" of Mississippian centers in the 14th century can be seen as a consequence of the nature of Mississippian biological and social reproduction. In general, discussion of cases of "decline" may be guilty of overinterpretation, to the extent that simple, dynamic models can account for many observed changes in archaeologically known populations.

Muñoz, Arturo René (Texas-San Antonio) (see also *Saul, Julie Mather*)

[13] **The Excavations at RB-11: A Classic Maya Residence in Northwestern Belize**

This paper presents the results of extensive excavations at the site of RB-11, a small non-elite rural residence located on the Programme for Belize property in northwestern Belize during the spring and summer of 1994. The work done at the site revealed evidence for occupation spanning the entire Classic period. The data are framed not only in terms of culture history, but also in terms of its implications for settlement patterns and the federal model of Maya political organization.

Murphy, Harry (Center for American Archaeology)

[72] **National Science Foundation Young Scholars' Contribution to Archeology**

High school students participating in the National Science Foundation Young Scholars' program at the Center for American Archeology have made contributions to the understanding of our archeological past. With the guidance of professional archaeologists as mentors, students conducted research on an array of topics including geomorphology, bioanthropology, zoology, ethnobotany, lithic and ceramic technology, site structure and settlement patterns. This paper reviews selected research projects highlighting their contribution to the field.

Murphy, Larry E. and *Daniel J. Lenihan* (both, National Park Service)

[29] **Historic Shipwrecks: A Study in State Sanctioned Antiquity Trafficking**

Historic shipwrecks in U.S. waters comprise a major heritage resource base. This unique resource

spans the entire range of post-contact history in the New World and often represents international patrimony. Treasure salvagers exploit legal loopholes and bureaucratic timidity to gain access to artifacts of the sea in a manner that would be unthinkable in a land site.

Murray, Matthew L. (Harvard)

[27] **Looking Beyond the Center: A Landscape Approach to the Late Iron Age Oppidum at Kelheim, Germany**

Research concerning Late Iron Age centers (*oppida*) is often focused on the interiors of these vast fortified settlements. Models of the oppida based on a distinct urban/rural dichotomy have assumed the presence of densely populated rural hinterlands. Since 1991, a project of field and archival research at Kelheim in southeastern Germany has sought to develop a landscape approach to the study of one such center to explore these assumptions. In combination with an examination of internal structure, this perspective helps to explain patterns discovered within the settlement and to illuminate the evolution of the oppida.

Myers, Thomas P. (University of Nebraska State Museum)

[125] **Missions and Population Disruption in the Peruvian Amazon, 1639-1850**

Missionary activities in the Peruvian Amazon resulted in population reduction, forced migration, mixing of populations, cultural simplification, and dependence upon European trade goods. These events and processes are recorded in the writings of the missionaries and other early observers. They should also be reflected in the archaeological record. Hypotheses of how these processes might be reflected in the archaeological record are tested against archaeological evidence from the Franciscan mission at Sarayacu. There is strong evidence for the mixture of populations (forced migration is an inference) and for the mixing of indigenous cultures, but no evidence of population reduction or cultural simplification.

Myster, James E. (Minnesota Historical Society)

[83] **A "Weighted" Methodology for Determining the Lithic Reduction Technologies at Six Galena Chert Acquisition Sites in Fillmore County, Minnesota**

Archaeological investigations were conducted on six early Holocene Galena chert acquisition sites in Fillmore County, Minnesota from 1990 to 1992. An analysis of the lithic reduction sequence was attempted based upon the differential weighting of morphological variables on flakes. Results indicate that these sites functioned primarily as a series of short duration middle stage lithic reduction camps. Much of the actual acquisition (and presumably most of the early reduction) took place at lag deposits in the ravines immediately adjacent to the sites. This methodology holds great promise for helping sort out the reduction sequence at other acquisition/reduction sites in the area.

Myster, Susan M. T. and *Erin H. Kimmerle* (both, Hamline)

[120] **A Bioarchaeological Investigation of the Hypothesized Relationship Between the Clam River Focus of Wisconsin and the Mille Lacs Aspect of Minnesota**

In 1963 W. C. McKern hypothesized a close cultural relationship between three ancient cultures, the Clam River Focus of the Effigy Mound Culture from northwest Wisconsin, and the Malmo and Kathio cultures of the Mille Lacs Aspect in northcentral Minnesota. This relationship was postulated based on similarities of burial practices and ceramic assemblages. McKern's hypothesis was tested by applying a biocultural approach, analyzing additional mortuary practice variables as well as craniometric and nonmetric analysis of the associated human remains. Preliminary results question McKern's hypothesized close affinity between these cultures.

Naranjo, Tessie (Santa Clara Pueblo)

[93] **The Agricultural Tradition at Santa Clara Pueblo**

Santa Clara Pueblo has been in existence for nearly 700 years. Throughout these years our ancestors have defined an intimate relationship with the land and an understanding and appreciation of natural resources. It has been but a mere 40 to 50 years that we no longer live as an agricultural people. The recent loss of knowledge, skills and ways of growing crops has been dramatic, and today there are only a few people involved in any agricultural activities. Our community's concern is to remember our agricultural background since all our stories, myths, ceremonies and prayers stem from an agricultural way of life.

Nash, Donna J. (Florida)

[73] **Wari Domestic Architecture and Site Planning: A View From the Moquegua Drainage**

This poster documents Wari domestic architecture on the southern periphery of Wari expansion, in the Moquegua drainage, Peru. Maps and illustrations of a domestic site associated with Cerro Baul are used to address construction sequence and site planning. Construction techniques are also documented through oblique photographs of the site. Site planning and domestic architecture exhibit evidence of a form of dual social organization which is typical of later Andean society.

Nash, Stephen E. (Arizona)

[133] **Archaeological Dendroclimatology in Alaska: Results and Prospects**

Archaeological dendrochronology experienced a florescence of institutional and individual research activity during the 1930s and early 1940s that has not been matched since. An important participant in this research was James Louis Giddings (1909-1964) who, from 1938 to 1942, conducted solo field research along the Yukon and Kobuk Rivers in Alaska. The archaeological and living-tree dendrochronological samples collected by Giddings have been reanalyzed and used to reconstruct behaviorally relevant climatic variability. The current research illustrates the potential utility of archived collections for archaeological and dendroclimatic research, as well as research into the history of Americanist archaeology.

Näsman, Ulf (University of Aarhus)

[128] **Changes in the Archaeological Record and the Development from Tribe to State in Denmark**

The rich archaeological record of south Scandinavia gives a detailed picture of the culture history of the first millennium A.D. There are, however, a number of conspicuous changes in the composition of the record. These changes have been explained very differently. A more clear apprehension of their character is possible, provided that the different background of the various archaeological source formations is considered. I will survey sources about rural production, religion, warfare, and social and political organization, and describe how their different rhythms of change may correspond to different phases of development in the society that produced the record.

Near, Julie, and *Jason Bass* (both, California-Berkeley)

[79] **The New Imperialists: Graduate Students as Specialists in Eastern European Archaeology**

American archaeologists working in Europe have recently noted the traditionally imperialistic nature of Western projects abroad. Consciously or unconsciously, these projects have imposed Western methodologies and concepts of the past upon artifacts and local archaeologists alike. One way that researchers have attempted to circumvent this problem is through specialization. Graduate students in particular are focusing on specialized analyses, typically overlooked by local archaeologists. While this nonconfrontational approach has proved politically effective, we believe it prevents any meaningful dialogue between "us" and "them." It seems that our endeavors are no less imperialistic than those of our predecessors; perhaps it is impossible to leave imperialism behind.

Neely, James A. (Texas-Austin), *S. Christopher Caran* (Texas-Austin), *Barbara M. Winsborough* (Winsborough Consulting), *Francisca Ramirez Sorensen* (Texas-Austin), and *Salvatore Valastro, Jr.* (Texas-Austin)

[82] **A New Approach in Dating the Prehistoric "Fossilized" Canals in the Tehuacan Valley of Southern Puebla, Mexico**

A means has been developed to date the use of the "fossilized" irrigation canals of the Tehuacan Valley. Microbial mats grew within the canals when in use and were preserved in laminated travertine that precipitated from the calcite-saturated spring waters. The mat material was decalcified and the organic residue radiocarbon dated. The methodology of canal sampling, the extraction of the organic fraction, and the radiocarbon dating of the samples are described. The significance of this technique and the resulting dates to the archaeology of the Tehuacan Valley and Mesoamerica in general are discussed briefly.

Neff, Hector (Research Reactor-Missouri)

[123] **Units in Chemistry-Based Ceramic Provenance Investigations**

The main methodological challenge in chemistry-based ceramic provenance research (or "sourcing") is to devise reliable and valid methods for aligning units of geographic space with the units of the multidimensional space defined by measured elemental concentrations. Methods advocated in this paper depend on systematic raw material sampling and allowance for changes in composition during and after manufacture. Groups or individual specimens are matched to a series of "knowns" (raw materials) in order to define a provenance probability surface. Compositional changes during or after manufacture may be modeled by adjusting the compositions of the raw materials.

[22] (see *Larson, Daniel*)

[61] (see *Bove, Frederick J.*)

[94] (see *Cackler, Paul*)

Neiman, Fraser D. (Yale): [123] Discussant

Neitzel, Jill (Delaware)

[111] **The Case of the Missing Outliers**

The extent of the Chacoan regional system has been mapped using the distribution of Chacoan outliers. Generally, the system is drawn as an ovoid with Chaco Canyon in its approximate center.

However, outliers are not evenly distributed throughout this area. While there are many to the north, west, and south of the canyon, there are only five to the east. This paper considers the reasons why so few outliers have been located in the east and the implications this pattern has for interpretations about Chacoan organization and external relations.

Nelson, Ben A. (SUNY-Buffalo)

[21] **Dating La Quemada**

This paper discusses 40 radiocarbon determinations from the site of La Quemada, critically evaluating them in relation to their stratigraphic contexts and the sampling strategy that led to their collection. Also discussed are implications of the dates for various competing models of economic growth and political development on the northern Mesoamerican periphery, including the core domination, peer-polity, structural underdevelopment, and autonomous growth models.

[111] Discussant

Nelson, Chris

[91] **Concept: Cultural Change**

Nelson, D. Erle (Simon Fraser): [17] (see *Chippindale, Christopher*)

Nelson, Kerry (Skidmore): [14] (see *Bender, Susan J.*)

Nelson, Leslie M. (Arizona State)

[39] **How Are These Sites Different? Investigating Petroglyph and Site Variation in South Central Arizona**

Petroglyph sites in south central Arizona are located in a wide variety of locations. Although there are basic petroglyph images considered to be typical of sites in this area, there is definable variation in the way these are executed. Characteristics of sites and individual elements in this area were analyzed using a GIS system and statistics. The purpose was to identify relationships between the location of the site in terms of geography, resource availability, site accessibility and residential patterns and the distribution of the variation in the apparently repeated petroglyphs.

Nelson, Margaret (SUNY-Buffalo): [48] Discussant; [92] (see *Hegmon, Michelle*)

Nelson, Norman B. (New Mexico State Land Office)

[42] **Pueblo Blanco: Cultural Resources Protection Through Ecosystem Restoration**

Pueblo Blanco, a classic period (A.D. 1300–1525) Pueblo Indian ruin in the Galisteo Basin, was threatened by arroyo cutting. The New Mexico State Land Office, in cooperation with volunteers from various governmental agencies as well as members of the general public, has constructed water control structures in arroyos undercutting roomblocks and dissecting plazas. This poster session documents the application of low-cost permaculture techniques to conserve and preserve an archaeological site and its surrounding ecosystem. This approach to ecosystem restoration provides long-term management options and efficient use of limited funds for cultural resources protection.

Nelson, Sarah M. (Denver): [23] Discussant

Netherly, Patricia J. (Fundacion Von Humboldt)

[112] **Hilltop and Riverside: Prehistoric Settlement Patterns in Ecuadorian Amazonia**

The opportunity to carry out a 123 km transect survey in Napo Province has provided new information on the settlement patterns found in the two principal geographic provinces: the riverine and interfluvial environments. The riverine province can now be defined to include those areas up the tributaries with access to the main stream, creating a band of river-related settlement some 15 km deep. Settlement pattern in the interfluvial zone indicates the potential for a large, but dispersed, population occupying and reoccupying smaller settlements. The new information recovered forces a reconsideration of resource distribution in the Western Amazon and of the rich man-poor man, riverine-interfluvial dichotomy.

Neusius, Sarah W. (Indiana University of Pennsylvania), *Lynne P. Sullivan* (New York State Museum), *Phillip D. Neusius* (Indiana University of Pennsylvania), and *Claire M. Milner* (Pennsylvania State)

[104] **Fortified Village or Mortuary Encampment? Exploring the Function of the Ripley Site**
Models of cultural dynamics for southwestern New York depend heavily on the long-standing assumption that the region's earthworks are defensive fortifications associated with late Prehistoric/Protohistoric villages. This assumption rests largely on analogy with the historic stockaded villages of various Iroquoian groups. Our reanalysis of the Ripley site, an earthwork on the Lake Erie bluffs, suggests that this assumption is not always warranted. Assemblage data and

spatial patterning indicate that mortuary ceremonialism was the primary activity at the site. Comparative studies of other earthwork sites are needed to confirm this interpretation and are critical to constructing regional models.

Neupert, Mark A. (Laboratory of Traditional Technology): [85] (see *Skibo, James M.*)

Neusius, Phillip D. (Indiana University of Pennsylvania): [104] (see *Neusius, Sarah W.*)

Neverett, Margot (Iowa): [33] (see *Whelan, Mary K.*)

Newell-Morris, Laura (Washington): [10] (see *Carter, Barbara J.*); [72] (see *Dunnell, Robert C.*)

Newsom, Lee (Southern Illinois-Carbondale)

[115] **Archaeobotany at Site PO-38 and an Emerging Picture of Prehistoric Subsistence on Puerto Rico**

Plant remains from excavations at PO-38 along the Cerrillos River, Puerto Rico, help to illuminate prehistoric human adaptation on this island. With components corresponding to Cuevas and early Ostinoid occupations (ca. A.D. 500–1200), the deposits span the period when prehistoric horticultural systems from the Amazon and Lesser Antilles were introduced to this island. Plant remains from PO-38 include edible herbaceous taxa and fruit trees; at least two species may have existed in homegardens. Manioc production is inferred from food processing implements. The PO-38 data are summarized and discussed in view of other recent developments in Puerto Rican paleoethnobotany.

Newsome, Elizabeth A. (Wisconsin-Eau-Claire)

[64] **Welcoming the Katun: Stela A at Copan and the Final Tzolkin of the Cycle**

Stela A is pivotal in revealing the nature of the katun-ending rituals that centered upon Copan's Great Plaza. It is one of several stelae raised by the ruler 18-Rabbit-God K, which record a countdown of dates leading to 9.15.0.0.0. The monument's inscription concerns directional ceremonies which may have focused upon Temple 4, which stands beside Stela A. The paper argues that Stela A records a period of ritual preparation for the new katun conducted during its final 260 days, in which Temple 4 was the focus of communitywide rituals of world renewal.

Ní Ghabhláin, Sinéad (California-Los Angeles)

[81] **Church, Parish, and Polity in Late Medieval Ireland: A Regional Research Strategy**

The twelfth century reform of the Irish church resulted in the establishment of a territorially organized hierarchy. The dioceses and parishes established at that time coincide with existing secular polities: the dioceses being coterminous with chiefdoms and chiefdom confederacies, and the parishes reflecting the existence of subterritories within a chiefdom. This paper critically examines a regional research strategy developed in order to analyze the spatial organization of the medieval church and to examine the relationships of church and polity in medieval Ireland.

Nicholas, Linda M. (Wisconsin-Madison)

[86] **The Production and Exchange of Marine Shell Ornaments in Ancient Ejutla**

An unusual abundance of marine shell ornaments and debris was recovered in a segment of the Classic period Ejutla site during regional survey. Subsequent excavations in a domestic structure and associated craft middens confirmed the production of a variety of shell ornaments, using Pacific marine species. While some shell items were made for local use, the low percentage of ornaments (5%) relative to debris suggests that most production was for broader distribution. Shell working was not the only craft carried out by Ejutla households, and some of the manufacturing techniques used on shell were also employed in other crafts.

[20] (see *Feinman, Gary M.*)

Nichols, Deborah L. (Dartmouth) and *Thomas H. Charlton* (Iowa)

[26] **The Postclassic Occupation at Otumba: A Chronological Assessment**

The Aztec city-state of Otumba is the focus of long-term archaeological investigations. Analyses of surface and excavated ceramics and obsidian hydration dates from the capital, Otumba, indicate a dispersed Mazapan occupation (ca. A.D. 900–1200), a scattered Early Aztec (II) occupation (ca. A.D. 1300–1400), and an intense Late Aztec (III) and Early Colonial (III/IV) occupation (ca. A.D. 1400–1550). In the paper we incorporate radiocarbon dates, currently being processed, from unmixed excavated deposits to refine the local Late Post-Classic chronology.

Nickels, Marilyn W.

[80] **Integrated Resource Management**

Nielsen, Bjarne Henning (Thisted Museum)

[128] **Smedegaard: A Tell-Like Iron Age Village in Thy, Denmark**

From 1992-1994, Thisted Museum in Thy, Denmark, excavated a tell-like village at Smedegaard dating to the early Iron Age. This village type is common in the area, but here the exceptional use of chalk floors gave excellent conditions for bone preservation. Macrofossils in the form of seeds also were well-preserved. As the village existed for 400 years (ca. 300 B.C.-100 A.D.), a complex stratigraphy was formed helping us to secure samples for waterscreening as well as flotation samples. The well-dated material allows us to follow developments in use of land, domestic animals, and marine resources.

Nieves Zedeño, M. and Leon Lorentzen (both, Arizona)

[85] **Land Use, Landmarks, and the Formation of Territories: An Example from the Puebloan Southwest**

Archaeological territories traditionally implied bounded spaces wherein culturally homogeneous groups made a living. In the American Southwest, spatial distributions of traits such as ceramics, architecture, burials and, more recently, data on effective land use, have been used as indicators of territory boundaries. However, the existence of territories so defined has been challenged in numerous modern Indian land claims. Drawing from archaeological and historic land use trajectories in the Puebloan Southwest, this paper addresses this challenge by evaluating the reliability of criteria for delimiting prehistoric boundaries, and attempts to reconstruct a history of territory formation in the area.

Norris, Susan M. (Harvard)

[73] **New Methods in Obsidian Hydration Dating: Results from Yau-tepec, Morelos, Mexico**

Obsidian hydration dating has produced ambiguous data. We addressed this problem by hydrating glass in its ambient environment (vs. inducing hydration in the lab). We buried source obsidian, archaeological obsidian, and standardized glass at the site of Yau-tepec for one year. The project goals were to 1) examine the effect of micro environmental variation on hydration rates, 2) develop a hydration rate for obsidian in Yau-tepec considering factors besides temperature data, and 3) provide dates for archaeological obsidian. We measured the rims with a more precise, new technique called Hydrogen Profiling, performed on a Nuclear Accelerator. Results indicate that micro environment may be a significant factor in the rate of hydration.

Norton, Mark R. (Tennessee Division of Archaeology): [87] (see *Broster, John B.*)

Novick, Lee (North Carolina Department of Transportation)

[129] **Site Distributions and Survey Strategies in the Southern Interior Coastal Plain**

Examination of site distributions and survey strategies has focused on the Eastern and Midwestern woodlands, the Desert West, and the Southern Piedmont. North Carolina's Interior Coastal Plain exhibits the least relief of the state's physiographic regions. Archaeological studies mirror the upland/lowland dichotomy reflected by soil formation and vegetation. Major river systems characterize the region's topography with valleys, terraces, and uplands. Results of numerous survey projects are compared and range from judgmental strategies to environmentally stratified paired sampling units. The results illustrate similarly high site densities of one archaeological site per 11 acres. The region's diverse set of archaeological sites range from the Paleoindian to Contact periods and functionally represent locations to villages. Historic sites temporally represent the Contact period though the 20th century and functionally represent farmsteads and plantations to industrial sites. Over 600 sites distributed across 50 soil types are dominated by Norfolk sandy loam (20 percent). Survey strategies and site distributions across soil types and topographic settings are synthesized.

Noyes, Peter T. (Navajo Nation Historic Preservation Department): [67] (see *Anyon, Roger*)

O'Brien, Christopher J. (Wisconsin)

[68] **Cautionary Tales of the Crypt: Inferences from Prey Mortality in Ethnographic Context**

Aspects of hunter choice and prey capture are frequently inferred from the age profiles of mammals in archaeological faunal assemblages with little regard for the assumptions underlying such age-based mortality models. Analysis of the age profiles for large mammal prey taken by Hadza foragers in Tanzania provides an opportunity to evaluate mortality models resulting from observed hunting strategies. Results indicate that 1) the method of determining age significantly affects the profile type; 2) Hadza prey selection and capture methods are not accurately predicted with current mortality models; and 3) consideration for season of death and prey behavior is crucial for inferring human behavior from mortality data.

O'Brien, Michael J. (Missouri): [14] (see *Cogswell, James M.*); [74] Discussant

O'Gorman, Jodie (Wisconsin-Milwaukee)

[45] **Hierarchies in Oneota Social Organization: A Gendered View of Domestic Economics**

The presence of hierarchies within Oneota social organization is explored through a gender specific analysis of economics at the household and community levels. Various types of hierarchies and possible contexts of inequality in Oneota economics are considered using data from the Tremaine site, a longhouse village in southwestern Wisconsin. Subsistence data, spatial analysis of site structure, task analysis, and ethnographic data are used to evaluate the presence and nature of hierarchies in Oneota social organization.

Odell, George H. (Tulsa): [28] Discussant

Ogburn, Dennis (California-Santa Barbara)

[53] **Cemetery Survey Data and Cultural Continuity and Change in Nasca, Peru**

Survey data collected on cemeteries in the Nasca drainage of Southern Peru were analyzed to see if such data could reveal patterns in time and/or space when considering cemeteries as separate site types. The best results were obtained when the cemetery locational patterns were analyzed with respect to habitation patterns, revealing a long association with ceremonial areas and reactions to sociopolitical changes. Patterns of artifact types and tomb construction styles and materials suggested changes through time and space, but the multicomponent nature of the cemeteries was problematical and could be clarified if combined with excavation data.

Oldale, Robert N. (U.S. Geological Survey)

[87] **Late Quaternary Changes in Relative Sea Level Adjacent to the Northeast Coast of Massachusetts**

Radiocarbon dates from two submerged strandline features off Massachusetts provide limited control on a relative sea-level curve (RSL) for the western Gulf of Maine during the late Quaternary. The curve indicates a highstand of +33 m at 14 ka B.P. and a relative low stand of -43 at 12 ka B.P. Deep water in the near offshore indicates that paleoshore lines were never far from the present shoreline since the Paleoindian occupation adjacent to the Gulf of Maine.

Oliver, Jose (University College London)

[115] **The Cerrillos Valley Projects, Puerto Rico: A Regional Perspective**

The Cerrillos Valley data recovery projects sponsored by the U.S. Army Corps of Engineers (1980s-1992) have resulted in the most comprehensive archaeological investigations to date in Puerto Rico. This paper first integrates the information recovered into a single coherent overview of the prehistory of Cerrillos. The data are then reevaluated in relation to islandwide prehistoric processes. Three topics are highlighted: a) the process of expansion and colonization from coastal to intermediate hill settings, b) the development of local ceremonial centers with structured precincts, and c) their relationship to the rise and decline of primary ceremonial centers in Tibes (Ponce) and Caguana (Utua).

Olsen, Sandra L. (Carnegie Museum of Natural History), *Victor Zaiibert* (Petropavlovsk Pedagogical Institute, Kazakhstan), and *David Anthony* (Hartwick)

[77] **Botai, a Prehistoric Settlement of Horse Hunters in Kazakhstan**

Botai, an Eneolithic settlement (5500-4500 B.P.) of 145+ pithouses in the steppes of north-central Kazakhstan, is the largest in the region prior to the Bronze Age. Research has centered around the question of how the economy of these indigenous hunters enabled them to adapt to harsh environmental conditions and maintain a substantial population in the village. Hunting strategies, food processing, migration and seasonality, house construction, and the introduction of horse domestication are all examined. The Botai culture is compared and contrasted with the nomadic pastoralist Kazakhs of recent historical times.

Olson, Kirsten A. and Lisa J. Lucero (both, California-Los Angeles)

[15] **Control of Surplus Labor and the Distribution of Wealth and Power in Late Classic Maya Society**

Surplus labor is used by elites to create monuments, public works, and wealth goods. The differential distribution of these labor products serve as evidence for different strategies to promote and maintain their power. Monumental architecture and public works requiring large labor forces provide direct evidence for centralized power and authority. The distribution of wealth goods created by small scale, specialized labor forces define the broader political ties that elites must maintain to legitimize their power. We examine the products of surplus labor among the Late Classic Maya—namely monumental architecture and wealth goods—to illustrate how labor control serves to legitimize and maintain power.

O'Shea, John M. (Michigan): [104] (see *Milner, Claire McHale*)

Orrego C., Miguel (IDAEH, Guatemala): [73] (see *Ford, Anabel*)

Owen, Bruce (Programa Contisuyo)

[99] **War and Engineering, Ostentation, and Social Status in the Late Intermediate Osmore Drainage**

From A.D. 1000 to 1350 in the Upper Osmore drainage, Chiribaya and Tumilaca people lived in unfortified sites, built modest canals to reclaim easily exploited farmland, and developed highly ornate material cultures and obvious social ranking in burials. From A.D. 1200 to 1535, Estuquiña people lived in dense-walled hilltop towns with elaborate defenses, and built vast areas of agricultural terraces and ambitious canals in extremely rough terrain. Despite evidence of large coordinated engineering projects that suggest organized leadership, the Estuquiña had a very plain material culture and minimal evidence of social differentiation in burials. What do these radically different cultural "styles" tell us about the forms, appearance, and reality of power and status?

Owens, Dalford D. (Tennessee) and *John E. Byrd* (East Carolina)

[10] **A Method for Measuring Relative Abundance of Fragmented Archaeological Ceramics**
Archaeologists commonly use simple counts of specimens as a measure of relative abundance for various fragmented archaeological materials. Simple counts, however, are prone to error due to the differential size of fragments. One solution to this problem is to size sort specimens using a screen set and to multiply the number of fragments by the squared screen size and sum the products of the respective screens. Defining this value as the "effective area," experimental and archaeological applications show that use of this method improves accuracy of quantitative ceramic analyses.

Oyuela-Caycedo, Augusto (Calgary)

[127] **Domestic and Ceremonial Life in North Andes Chiefdoms: Change and Continuity in the Sierra Nevada de Santa Marta**

The objective of this paper is to analyze the changes and continuity of domestic and ceremonial life of the chiefdoms that occupied the northern face of the Sierra Nevada de Santa Marta. The analysis is done by using ethnoarchaeological and historical data from the present-day Kogy Indians, descendants of the Tairona chiefdoms (intensively studied by Gerardo Reichel Dolmatoff), and by comparing archaeological settlement data from the Parque Tairona, the region of Gaira and the Upper Buritaca River drainage. This data allows for the hypothesis and reconstruction of some of the changes that took place in the Sierra Nevada de Santa Marta since the development of the complex Tairona chiefdoms.

Padgett, Thomas J. (North Carolina Department of Transportation)

[136] **Geomorphological and Pedological Factors in Site Disturbance Evaluations for Cultural Resource Studies**

Archaeological sites are subjected to natural and cultural alterations that have important consequences for the interpretations given to the site data. Archaeologists have therefore always attempted to recognize the actions that have helped shape the post-depositional environment of their sites. This is of paramount importance to archaeological studies undertaken for historic preservation compliance, where an accurate evaluation of a site's research potential (i.e., "significance") must be made in an efficient and timely manner. This paper briefly reviews types of site disturbance that can and should be recognized at an early stage in archaeological investigations to adequately "identify and evaluate historic properties" as required under U.S. federal regulations.

Paine, Richard R. (Cincinnati)

[52] **A Dynamic Model of Late Classic Maya Power Relationships at Copán, Honduras**

The model offered explores Late Classic shifts in power from the Copán royal dynasty toward non-royal elites by combining 16th century Quiché organization and land tenure systems, which emphasize elite lineage land control, with classical supply and demand theory. Early in the Copán sequence, a small population placed little pressure on land supply and power derived from land control was relatively limited via ideological power. Power derived from land control increased as population fully colonized the valley and peaked when soil degradation decreased the supply of arable land. Elite households then became primary centers of economic and political power.

Palka, Joel (Vanderbilt)

[64] **Historical Archaeology of the Nineteenth-Century Lacandon Maya of Peten, Guatemala: A Study of Cross-Cultural Interaction and Culture Change**

The Lacandon Maya, who currently live in the jungle lowlands of Chiapas, Mexico, have been viewed as an isolated people that only recently experienced outside contact and culture change. However, modern Lacandon society is not a relic of the past, but it is the result of cross-cultural interaction and culture process. The historical archaeology of settlements in Peten, Guatemala, examines transformations in Lacandon culture during the 19th century. Due to sociopolitical and

economic developments in Latin America at this time, the Lacandon Maya were affected by trade, missionaries, migrations, conflict, and depopulation.

Panfil, Maria (Pennsylvania State): [66] (see *Hirth, Kenneth*)

Parker, Kathryn (Great Lakes Ecosystems): [59] (see *Simon, Mary*)

Parker, Douglas R. (Colorado): [107] (see *Welker, Eden*)

Parkington, John (University of Cape Town): [39] Discussant; [60] Discussant

Parsons, Jeffrey E. (Michigan), *Elizabeth Brumfiel* (Albion), and *Mary Hodge* (Houston-Clear Lake)

[26] **Are Aztec I Ceramics Epiclassic? The Implications of Early Radiocarbon Dates from Three Aztec I Deposits in the Basin of Mexico**

Thirty-one radiocarbon dates from recent excavations at three deep stratified sites in the Basin of Mexico suggest that the Coyotlatelco, Mazapan, and Aztec I ceramic assemblages overlapped substantially in time in parts of the Basin. These dates also suggest that Coyotlatelco pottery may overlap with parts of the Late Classic Metepec phase in the southeastern Basin, while Aztec I, Aztec II, and Mazapan pottery are all to some degree contemporary in the northwestern Basin. There is now a need to reassess older arguments (Noguera, Vaillant, Franco) about the chronological overlap between these Epiclassic and Early-Middle Postclassic ceramics phases.

[11] Discussant

[26] (see *Evans, Susan Toby*)

Patterson, Thomas C. (Temple)

[63] **Conceptual Differences Between Mexican and Peruvian Archaeology**

This paper asks why interpretations of pre-Columbian history and state formation in Mexico and Peru are framed in different terms by archaeologists. Part of the differences are due to the empirical realities of the two civilizations. This paper explores how sociological considerations and theoretical orientations of archaeologists, as they interpreted these empirical realities, contributed to the construction of interpretative differences.

[125] Discussant

Pauketat, Timothy R. (Oklahoma)

[59] **Cahokian Political History as Punctuated Disequilibrium**

The history of Cahokian community development is punctuated by well-demarcated and sometimes dramatic shifts in demography, organization and economy. These shifts include power consolidation, symbolic reconsolidation, relocation of residential areas, cessation of monument building and loss of regional control. These are likely results of the prosecution of top-down political measures and bottom-up resistance to such measures. Unlike S. Gould's "punctuated equilibrium," Cahokian shifts reflect the negotiation of power between an elite and a resistant nonelite population, not a society evolving *en masse*.

Pavlish, L.A. (Toronto): [98] (see *Hancock, R. G. V.*)

Paynter, Robert (Massachusetts-Amherst)

[102] **Practicing Critical Archaeology: Problems and Methods**

A key tenet of critical archaeology is that the study of the past should be conducted with an awareness of how our practices fit within present social relations with the goal of changing those relations in the future. This paper considers how to position a particular field site in the conduct of a critical archaeology. In particular, popular histories of Deerfield, Massachusetts are studied as a means to develop themes to guide the critical studies of New England's past.

Peacock, Evan (U.S. Forest Service)

[136] **Testing the Efficacy of Shovel Test Screening on the Tombigbee National Forest, Mississippi**

While shovel testing has received critical attention as a survey technique, the effects of screening have seldom been addressed in actual field situations. On the Tombigbee National Forest, several quarter-sections were surveyed, without screening, in 1984. These areas were resurveyed in 1993 with screening being employed. Overall site density was more than three times higher than originally recorded. As expected, small sites were underrepresented in the original survey, and site sizes were often underestimated. The results of the study suggest that screening should be a mandatory practice in shovel test surveys.

Pearsall, Deborah M. (Missouri)

[32] **Reconstructing Subsistence in the Lowland Tropics: A Case Study From the Jama River Valley, Manabi, Ecuador**

Macroremain and phytolith data are integrated to reconstruct subsistence in the Jama River valley, Ecuador. Maize begins to increase in importance during the Muchique 2 phase (A.D. 420–790), in the context of expansion of settlement from the river valley into the uplands. The valley is progressively deforested due to the combined influences of agricultural expansion and volcanic ash fall. A broad-based subsistence system characterizes human to plant interrelationships in the valley throughout prehistory.

[34] (see *Buckler, Edward*)

[131] (see *Zhao, Zhijun*)

Pedersen, Lisbeth (Kalundborg og Omegns Museum)

[117] **Elaborated Mesolithic Fishing Technology—An Alternative and/or a Stepping-Stone to the Indigenous Introduction of Agriculture**

Stationary fishing structures from mesolithic and neolithic times have been excavated in Zealand, Denmark. It is a kind of passively operating fishing method which implies complex economical and social structures in mesolithic times. Such elaborated mesolithic technology and organization may be one of the reasons why the mesolithic population in northern Europe for 1000 years stood up to the introduction of agriculture from the Bandceramic cultures in central Europe, and thereafter succeeded in an indigenous introduction of agriculture.

Pelcin, Andrew (Pennsylvania)

[72] **Controlled Experiments in the Production of Flake Attributes**

This paper examines the use of controlled experiments to understand specific elements of flintknapping which cannot be observed or controlled by human flintknappers. The advantage of controlled experiments is that they allow each element of flintknapping to be examined separately, and thus be understood in terms of those actions of the flintknapper which affect the flake produced. The experiments reported here are concerned with the effects of the amount of force and angle of blow used during flake production. The understanding of the effects of force and angle of blow has opened new avenues of research into the potential behavioral information preserved in the lithic record.

Pendergast, David M. (Royal Ontario Museum)

[88] **Garbage**

Despite the accumulation of a considerable body of data on refuse deposition in ancient Maya communities, the model of Classic-period garbage disposal is still one of rotting agglomerations of household waste surrounding residential platforms. This malodorous scene can, in fact, be set aside as a result of investigations at Altun Ha and Lamanai, Belize. The supplanting of the model with one that fits the archaeological information has major implications regarding community sanitation, construction practices, dietary data derived from midden analysis, and the significance of refuse deposit testing for structure and site dating and for the identification of population peaks.

Penman, Shawn L., Ann F. Ramenofsky, Anastasia Steffen, and Steve Dominguez (all, New Mexico)

[42] **Surface Investigations of High-Low-Density Records in the Lower Chama Valley**

The Chama Archaeological Project is conducting investigations of the late prehistoric/early historic artifact record in north central New Mexico. Our investigations focus on the surficial archaeological record of an area and time period where there has been little sustained research. Using state of the art technology we construct surface maps of high-density locations, some previously unmapped. To understand the spatial context of the high-density record we are mapping and doing in-field artifact recording of the low-density record. Here we present our initial spatial results in the form of maps of high-low-density locations.

Perdikaris, Sophia P. (Hunter)

[101] **Trade and Economy at a Medieval Fishing Village: The Site of Stovvagan, Northern Norway—A Zooarchaeological Perspective**

Recent research has documented the evolution of a proto-urban center ca. A.D. 1200 at the site of Vagan near the center of the modern fishing industry in Lofoten. The center developed into an important node in the growing medieval codfish trade, funneling resources south to Bergen and ultimately to the Hanseatic trade network. The site is a key to understanding the transformation of a self-sufficient northern maritime society into a periphery of the evolving European core. This paper discusses general patterns and preliminary results of research currently underway in an effort to better understand the processes affecting this economic transition.

Pereira, Carlos (Camara Municipal de Rio Maior) and *Paul Thacker* (Southern Methodist)

[28] **Identifying Lithic Craft Specialization: A Caveat from Ethnoarchaeology**

Prehistorians have analyzed numerous chipped stone assemblages for evidence of craft specialization. This paper examines several linking arguments used to identify changes in the social context of lithic production. Significance of intersite patterning, flake attribute convergence, and other technological observations is assessed in light of historical and ethnographic data on the gunflint industry of Azinheira, Portugal. Overall, archaeological interpretation of these lithic assemblages is nearly opposite the known contexts of flint production.

Peterkin, Gail Larsen (Tulane)

[60] **Specialized Final Magdalenian Hunting Technology in Southwestern France**

The statistical analysis of French Upper Paleolithic weapon armatures indicates that the Magdalenian was characterized by the preferential use of organic weapon armatures (sagaies and harpoons) although, in some cases, backed microliths were inserted into grooved sagaies. During the Final Magdalenian, however, there was a brief return to traditional lithic projectile points (e.g., Azilian points, dards, Laugerie-Basse points, Teyjat points, and Magdalenian shouldered points). This paper describes a sample of 569 complete lithic weapon armatures from 10 Final Magdalenian sites in southwestern France and examines the brief reappearance of specialized lithic weapon armatures in terms of environmental and behavioral variables.

Peters, Gordon R. (USDA Forest Service), *Susan Mulholland* (Minnesota-Duluth), *Steven Mulholland* (Superior National Forest), and *Grayson Larimer* (Minnesota-Duluth)

[51] **Paleoindian Research in Northeastern Minnesota: The Land Between Complexes**

Paleoindian materials have been recovered, mostly as isolated finds, throughout northeastern Minnesota for a considerable period of time. However, only during the past several years has any systematic research been conducted to determine age and distribution patterns. The paucity of early materials appears to be a result more of lack of survey than lack of material. In addition, basal dates from pollen cores suggest that a relatively large portion of the area was free of glacial ice earlier than previously estimated. This paper will discuss this research within the framework of geomorphological and paleoenvironmental reconstruction.

Pfaffenberger, Bryan (Virginia): [124] Discussant

Phillips, James L., and Lawrence H. Keeley (both, Illinois-Chicago)

[85] **Chaines Operatoires and Late Pleistocene—Early Holocene Hunter-Gatherer Behavior**

This essay is concerned with a chaines operatoires approach to lithic analysis in the Old World Paleolithic. Specifically, we use this approach, and edge-wear analysis, to understand life histories of artifacts and assemblages. We assume that the production of lithic material by hunter-gatherers is predicated in a series of decisions based on traditional methods, including the choice of raw material, reduction strategies, uses, and patterns of discard. Using examples from the Upper Pleistocene and Early Holocene of Europe and Southwestern Asia, we indicate how this approach is an important tool for understanding hunter-gatherer behavior in the past.

Picha, Paul R. (Missouri)

[135] **Expedient Mussel Shell-Tool Technology on the Northern Great Plains: Historical, Archaeological, and Taphonomic Considerations**

Indigenous mussel shell-tool technology on the Northern Great Plains remains an understudied topic among archaeologists despite its recognition during the early twentieth century (cf. Will and Spinden 1906). Similarly, historical accounts left by European American explorers, scientists, and fur traders document expedient shell-tool use by native groups such as the Yanktonai Dakotas, Mandans, and Hidatsas. A context-driven archaeology for the 1990s, much like its cultural-historical and processual predecessors, integrates taphonomic considerations attendant to more fully examining the naiaid and human records on the Northern Great Plains.

Pierson, James (Ohio State): [70] (see *Waters, Michael R.*)

Pietak, Lynn M.

[129] **Charting Culture Change on the Body: European Objects in Munsee and Delaware Mortuary Contexts**

In the Delaware Valley region, European objects are frequently found in early historic mortuary contexts, while they are relatively scarce in nonmortuary features. Over the past two years, museum and private collections have been studied by the author. The results of this analysis suggest that the importance of these goods in mortuary contexts lies in their meaning as objects of personal ornamentation. Archaeological and ethnohistorical evidence is used to trace how personal

ornamentation is elaborated in Munsee and Delaware mortuary contexts as both a public and a private symbol.

Pike-Tay, Anne (Vassar): [60] (see *Berlando de Quirós, Federico*)

Pintar, Elizabeth (Southern Methodist) and *Debora M. Kligmann* (University of Buenos Aires)
[32] **Archaeological Bifaces and the Limits of Experimental Reduction Models**

Experimental bifacial reduction models are commonly used in the analyses of archaeological lithic assemblages. A single experimental model was applied to two archaeological case studies in southern and northwestern Argentina. The results obtained do not match those predicted by the model. As a result we discuss the utility of applying models that focus on endproducts rather than on manufacture rejects, debitage and site formation processes to archaeological assemblages.

Pinto, Marina (Tulane)

[88] **From this Life to the Next: Human Agency, Cultural Context and the Social Practice of Burial**

In both history and archaeology, approaches to cultural encounters, and to the past in general, have been colored by structuralist and functionalist paradigms concerned with long term trends or societal processes at the expense of the role of the individual in mediating social forces. In this paper, I show that the role of the human agent in social action can be recovered from excavations and documents alike by exploring interpretations of Colonial period Maya burials from Tipu in connection with burial and funerary data from 15th through 17th century wills collected in Madrid and Seville.

Piperno, Dolores R. (Smithsonian Tropical Research Institute)

[116] **Late Pleistocene/Early Holocene Human Ecology of Central America**

Recent evidence from paleoenvironmental and archaeological studies indicates that Paleoindian populations in the Central American tropics exploited a wide range of vegetational zones, from thorn-scrub and savanna-type environments to evergreen tropical forest, the latter of which they were actively modifying through fire and small-scale clearing. It follows that Paleoindian subsistence was not characterized by the specialized pursuit and capture of big-game animals, and that adjustments to the tropical forest biome took place during or very soon after the colonization of the region. This paper reviews the evidence pertinent to early human settlement and adaptation in the American tropics.

Pitblado, Bonnie L. (Arizona) and *Robert H. Brunswig, Jr.* (Northern Colorado)

[105] **Late Paleoindian Culture Dynamics and Environmental Change in the Central High Plains and Rocky Mountains**

Emerging paleoenvironmental and archaeological evidence for Central High Plains and Rocky Mountain Late Paleoindians appears to support a minimum of two hypothetical models of human-environment/human-human interaction: 1) one involving a culture ecology-based dichotomy of mountain and plains populations, or 2) existence of a single, multiregional, seasonally migrating population utilizing separate ecologically adapted mountain-plains technological inventories in different seasons. Current data on Late Paleoindian archaeology and associated ecozone-specific paleoenvironments and paleoclimates are examined for clues about culture and environment dynamics from mid-Plano times (ca. 8500 B.P.) to the traditional end of Paleoindian times (c. 7500 B.P.). While it is evident that more data are needed for resolution of Late Paleoindian culture-environment dynamics, a major restructuring of current conceptualizations of the culture historical division of Late Paleoindian and Early Archaic period appears to be indicated.

Pleger, Thomas C. (Wisconsin)

[98] **Archaic/Woodland Mortuary Use of Native Copper as an Indicator of Social Complexity and Subsistence Specialization in the Western Great Lakes**

This paper examines changing social structure among prehistoric peoples in the Northern Great Lakes from 3000 B.C. to A.D. 1. The Archaic/Woodland transition is marked by a radical change in the production and use of Native Copper in mortuary contexts. This paper suggests that such changes are in part the result of both increased subsistence specialization and hunter-gatherer social complexity. It focuses on a comparison of mortuary native copper furniture between the Oconto Site, WI (a Middle Archaic, Old Copper Complex cemetery site) and the Riverside Cemetery, MI (a multicomponent Old Copper/Red Ocher Complex cemetery and habitation site).

Plunket, Patricia, Gabriela Uruñuela, and Helga Geovannini (all, Universidad de las Américas)
(see also *Uruñuela, Gabriela*)

[66] **The Settlements of Tetimpa**

The eruption that covered an important area of the western slopes of the Popocatepetl volcano in the state of Puebla has preserved examples of Late Preclassic structures. Discussed are the variety and

function of the buildings and their associated features uncovered by the Tetimpa Project.

Podgorny, Irina: [63] Discussant

Pohlman, Lenora (Iowa): [66] (see *Sheehy, James J.*)

Politis, Gustavo (Universidad de la Plata)

[63] **Current Archaeology in Argentina: Is There Any Alternative Paradigm?**

In recent times, several authors tried to understand the structure of contemporary Argentinean archaeology and to trace the main theoretical influences of the discipline. All of them failed in finding any strong current archaeological tradition developed without the commonly leading Anglo-American or European paradigms. Most of Argentinean archaeologists continue to practice culture historical reconstruction, elaborating empirical generalizations, or trying to apply neo-evolutionary and adaptive concepts. In this paper, I will try to analyze the last three decades of Argentinean archaeology in order to understand why there are not any alternative paradigm in the country.

Pollard, Helen Perlstein (Michigan State)

[21] **The Transformation of Regional Elites in Central Michoacan**

During the period from A.D. 800-1521 central Michoacán saw the emergence of multiple independent political centers and their subsequent incorporation and subordination within the Tarascan State. Since 1990, excavations have been conducted at Urichu, located within the core of the Tarascan State. These have provided 1) the first archaeologically based chronology of the Epiclassic and Postclassic periods in the Lake Pátzcuaro Basin, 2) have allowed the definition of the material correlates of elite status during these periods, and 3) have provided a framework for testing hypothesis which relate local, regional and macroregional changes occurring during the Classic-Postclassic transition to the emergence of the Tarascan State. This paper will present results to date of this work, illustrating the embeddedness of Michoacán prehistory in the larger political and economic dynamics of Mesoamerica.

Pool, Michael D. (Texas)

[78] **The Mogollon Early Pithouse Period Settlement System**

Although some researchers consider the Early Mogollon to be sedentary village agriculturalists, there is a growing consensus that a mixed hunting-gathering-agricultural settlement system characterized at least the Early Pithouse Period. Using the ethnographic Western Apache settlement system as a model, this paper considers the form such a settlement system would take.

Pope, Elizabeth (Texas-Austin): [34] (see *Stomper, Jeffrey*)

Pope, Melody: [40] (see *Coursey, Cheryl*)

Potter, James M., and Mark Varien (both, Arizona State)

[78] **Unpacking the Discard Equation Through Computer Simulation**

Computer simulation is employed to evaluate the effect of occupation duration and population densities on the relative frequencies of artifact types at sites. Cooking pot refuse from the Duckfoot Site is used to construct a model from which variables are systematically altered to assess how accurately assemblage size predicts occupation duration. The results of the study indicate that the most variable and least accurate estimates are generated by short term, "few household" sites. However, estimates from the simulation are surprisingly comparable to what is predicted by using a discard equation that does not take into account many of the variables considered in the simulation.

Powell, Nena (South Carolina Institute of Archaeology and Anthropology)

[24] **South Carolina Archaeology Week**

Each year the South Carolina archaeological community celebrates a series of statewide events designed to raise public awareness of the state's multicultural heritage and enlist public support and participation in resource conservation. The goal of the professional community of South Carolina is to promote archaeological education statewide by organizing programs that stimulate public pride in the state's archaeological heritage, increase public understanding of why archaeological research is important, heighten public awareness of the loss of archaeological resources, educate the public about what they can do to help protect the state's resources, and get more people involved in legitimate archaeological activities.

Powell, Shirley (Northern Arizona) and *Miranda Warburton* (Navajo Nation Archaeology Department)

[35] **George Gumerman and Archaeological Administration: A View from Black Mesa**

The Black Mesa Archaeological Project (BMAP) was one of the first to benefit—in the form of

multimillion dollar funding—from CRM legislation of the 1960s. It was also one of the first to involve nonarchaeologists in archaeological decision making. Many years after the project's end, no one questions BMAP's contributions to archaeological knowledge. Here, however, another dimension of the project is reviewed: Gumerman's articulation of archaeology with the larger world and how that articulation has affected the practice of archaeology today.

Powis, Terry G. (Trent) and *Bobbi Hohmann* (New Mexico)

[37] **Ancient Maya Round Structures at Cahal Pech, Belize: New Insights on the Complexity of Middle Formative Circular Platforms**

The horizontal excavation of two circular platforms at the Tolok Group, Cahal Pech raises interesting questions about Middle Formative (650–350 B.C.) architectural techniques and practices, and their spatial contexts within patio/plazuela groups. The location of burials and caches on these platforms may also shed new light on the ritual importance of round structures in Formative Period Maya society. In addition to these special deposits, the location, size and elevation of the two round structures at the Tolok Group may represent the creation of social space with a particular focus on community/group identity.

Pozorski, Sheila (Texas-Pan American): [53] (see *Pozorski, Thomas*)

Pozorski, Thomas (Texas-Pan American): [89] (see *Pozorski, Sheila*)

Pozorski, Sheila, and *Thomas Pozorski* (both, Texas-Pan American)

[89] **Paleoenvironment at Almejas, a Mid-Holocene Site in the Casma Valley, Peru**

Near the mouth of the Casma Valley in Peru lies the Preceramic site of Almejas. In contrast to the dry bay and agricultural fields which currently characterize the site's vicinity, faunal remains from Almejas document a nearby estuary environment when the site was occupied about 7,000 years ago. Warm-water fish and molluscs which dominate the faunal inventory at this early time are rare or absent in later periods. These data have a bearing on both local paleoecological variation and more general issues of climatic change or stability prior to 3000 B.C.

Pozorski, Thomas, and *Sheila Pozorski* (both, Texas-Pan American)

[53] **The Emergence of Secular Power in the Casma Valley, Peru**

Early civilization in the Casma Valley was characterized by the emergence of secular power vested in ruling elite. By 1500 B.C., these elite had mobilized labor for construction of the largest mound structures extant in the New World. Such monumental structures functioned not only as large centralized storage facilities and temples, but also supported an elevated palace structure while adjacent buildings housed a support staff. Within this "palace" are both living quarters of the society's leader and public areas where polity affairs were conducted. Thus, this structure provides vital insights into both political leadership and political complexity some 3,500 years ago.

Prentiss, William C. (Frontier Archaeology): [28] (see *Mauldin, Raymond P.*)

Prentiss, William C., and *James M. Welch* (both, Frontier Archaeology)

[103] **Resource Intensification Without Sedentism: An Evolutionary Perspective on Prehistoric Change on the Northwestern Plains**

The "Little Altithermal" climatic episode (approximately 1800 to 500 B.P.) on the northwestern Plains is linked with an initial period of intense population influx and growth associated with high group mobility and plant resource intensification. Rapid population reduction by approximately 1000 B.P. in some areas may have resulted from severe competition and over-exploitation of sparse resources. Populations later increased with the renewed onset of moist conditions and immigration of new peoples. A selectionist perspective on these events is taken in order to avoid assumptions of continual population adaptedness, focusing instead on historical explanations of evolutionary success and failure.

Preucel, Robert (Harvard): [84] Discussant; [113] Discussant

Prezanno, Susan C. (SUNY-Binghamton) and *Vincas P. Steponaitis* (North Carolina-Chapel Hill)

[71] **Cultural Developments in the Upper Susquehanna Drainage, A.D. 900–1300**

Recent research on sites in the upper Susquehanna drainage has yielded new information about settlement and subsistence patterns during this critical period. One major change occurred at about A.D. 1000 with the appearance of longhouses, large palisaded villages, and intensive agriculture based on maize and beans. Around A.D. 1200, villages moved from floodplain to hilltop locations and showed a greater reliance on subterranean storage. Finally, around A.D. 1300, population density declined as this region became a sparsely inhabited buffer zone between polities centered elsewhere.

Price, Heather (California-Berkeley) and *Dominique Sacchini*

[60] **Variability and Site-Specific Contexts of Magdalenian Visual Imagery from the Languedoc-Roussillon of Southern France**

Variability in the forms and distribution of Magdalenian visual imagery (cave wall and portable art) is detailed and placed in 15 site-specific contexts in the Languedoc-Roussillon. This little known region is employed to test current models of art as the product of adaptive behavior on intra- and interregional scales. The goal is to better understand the significance of small scale variation in what is commonly thought of as one of the "hallmark behaviors" of hunter-gatherers in late Pleistocene western Europe.

Price, T. Douglas (Wisconsin-Madison): [84] Discussant

Prine, Elizabeth (California-Berkeley)

[79] **Mining the Past? Current Research Trends in Archaeology**

Legislation limiting access to minerals and antiquities was enacted by the US federal government in 1906. This paper shows that parallels in the 1906 laws affect/reflect the valuing of "extractive" archaeological research over "productive" research. Evidence for this is derived from *Dissertation Abstracts International*, *NSF Grants and Awards*, and *American Antiquity*. Based on these reports, research projects are ranked into categories ranging from primarily "extractive" to primarily "productive": excavation, survey and noninvasive fieldwork, immediate post-excavation analyses, and delayed or museum analyses. The paper closes with the implications of these findings for archaeology in light of the 1994 Annual Meeting's Ethics Panel recommendations.

Prior, Christine, Elizabeth J. Lawlor, and *Kyle Moffitt* (all, California-Riverside)

[43] **Radiocarbon Ages of Great Basin Wood Charcoals: Avoiding Errors Due to Unwarranted Assumptions About Stable Isotopes**

Can you trust radiocarbon dates on wood charcoal from the Great Basin? Only if you have accurately determined the $\delta^{13}\text{C}$ (stable carbon isotope ratio). A common assumption about archaeological charcoals is that the $\delta^{13}\text{C}$ value is -25‰. Because many desert shrubs use the C_4 or CAM photosynthetic pathway, actual values of Great Basin wood charcoals may range as low as -11‰. We tested common Mojave Desert woods that were reported to be preferred by the Southern Paiute for fuel and construction materials. We will present $\delta^{13}\text{C}$ values for these woods and discuss their potential effects on the calculation of radiocarbon ages.

Purdue, James R. (Illinois State Museum): [135] (see *Chambers, Karen E.*)

Purser, Margaret (Sonoma State)

[125] **Nineteenth-Century Logging in Pacific Guatemala**

Research at a 19th-century sawmill site at Finca Caramelo, a coffee plantation on the Pacific coastal plain of Guatemala, explores the impact of emerging economic and technological exploitation of this region in the context of an expanding Pacific economy. The boom-bust cycles of the 19th-century Pacific were driven by the increasing ability to extract primary resources such as minerals, agricultural products, and building materials, and redistribute them on an international scale. The Finca Caramelo project suggests some comparative frameworks for assessing patterns in material culture and landscape that marked this expansion of industrial capitalism around the Pacific.

Puseman, Kathy (Paleo Research Labs): [131] (see *Cummings, Linda Scott*)

Pyburn, K. Anne (Indiana)

[37] **"Orientalizing" the Maya**

Research on the ancient Maya has dramatically altered perspectives popular during the colonial period when early researchers laid the foundations of archaeology as a discipline. No longer do archaeologists expect to find evidence of vacant ceremonial centers supported exclusively by extensive agriculture in the Maya Lowlands. Both ethnohistorical and archaeological data have factored in this change, but interpretations continue to support a model of the ancient Maya as mysterious inhabitants of a world of politics, religion and trade that was "not like ours." This paper considers current trends in Maya studies that partake of the western intellectual tradition of "orientalism."

[23] Discussant

[64] (see *Cook, Patricia*)

[90] (see *Douglass, John G.*)

Quatrin, Dale W. (Pittsburgh)

[53] **Verticality and Social Complexity: What Does the Archaeological Record Say?**

Using archaeological data collected from four Formative-period (ca. 1000–A.D. 1) households in

the Valle de la Plata, Colombia, the often used theory of intracommunity economic interdependence encouraged or enforced by a high degree of altitudinally based environmental variation tightly packed into small horizontal distances ("verticality") is tested as an important factor in stimulating the development of complex social and political organization. Subsistence evidence (phytoliths, pollen, and carbonized macrobotanical remains) and cultural material enable us to say whether or to what extent verticality characterized the subsistence economy of the period.

Rafferty, Janet (Mississippi State)

[18] **Investigating Habitation Intensity at a Mississippian Mound Group**

Owl Creek Mounds in northeast Mississippi contains five mounds constructed during the Early Mississippian period. At least three of the mounds served as platforms for structures, but few artifacts have been collected from the surface of the 4 ha site. Data from systematic shovel testing, soil testing for available and total phosphates, microartifact analysis, and artifact density in mound fill indicate that there was little habitation activity at the site. Comparison with other ceremonial centers shows Owl Creek to occupy one end of a scale measuring variability in habitation intensity, even among vacant ceremonial centers.

Rager, Hal B. (Desert Research Institute, Reno)

[43] **GIS and the Yucca Mountain Project Archaeological Studies Program**

In 1993, the Quaternary Sciences Center at DRI began developing a Geographic Information System as part of the Yucca Mountain Project Archaeological Studies Program. Used initially for rapid retrieval of site location information and previous survey area data by project personnel, it is being tested as an analytical and modeling tool in archaeological research. Several domains appropriate for GIS analysis are part of the project's research design, including settlement pattern change through time, and relationships between plant resources, toolstone, water source distribution and artifact distribution. GIS analysis of these domains in the research design is presented.

Rahimi, Dan (Royal Ontario Museum)

[95] **Neolithic Ceramics in Wadi Ziqlab, Jordan**

Recent excavations in Wadi Ziqlab, Jordan, reveal a range of ceramic assemblages of the Late Neolithic. Analysis of petrofabric, technology and morphology in these assemblages defines ceramic change over time, and contributes to the understanding of human activity at the site and the culture-history of the region. Examination of body sherds as well as traditional diagnostics allows complete description of the assemblages, and provides data for discussion of locality of production and the extent of exchange.

Ramenofsky, Ann F. (New Mexico)

[123] **The Illusion of Time**

The construction of chronologies depends on the measurement of time. Yet, temporal measurement and chronological construction are independent research endeavors. Measuring time depends on such technical considerations as type and age of material, or available instrumentation. Chronologies, however, are measurement devices constructed for the investigation and resolution of some archaeological problem. Here, I focus on chronologies as archaeological research tools, stressing that because time is a continuous and infinitely divisible variable, there are no "natural", discoverable chronologies. Chronological units are more or less successful in the context of the research for which they were designed.

[42] (see Penman, Shawn L.)

[123] (see Steffen, Anastasia)

Ranere, Anthony J., and Patricia Hansell (both, Temple)

[34] **Modeling Agricultural Expansion in the Humid Tropics of Panama: A Geographic Information Systems (GIS) Approach**

The paleobotanical record from Panama indicates that burning of forests for swidden agriculture was already underway in the ninth millennium B.P. A pattern of increased population, escalated deforestation and soil erosion persisted for the next 6,000 years and eventually provoked a dramatic reorientation of the subsistence/settlement focus towards lowland river alluvia. In this paper we use GIS to model the expansion of agricultural populations in Central Panama and the affect of their activities on the landscape. We provide a preliminary test of the model based on probabilistic settlement data collected from part of that region.

Rapp, Rip (Minnesota)

[98] **The Determination of Sources of North American Artifact Copper Using Trace-Element Patterns**

Using instrumental neutron activation analysis, our research group has analyzed over 1,000 native copper samples from more than 50 geologic deposits in the United States and Canada. With this

database and employing multivariate discrimination techniques, we are able to source the copper in many North American copper artifacts with a high degree of probability. The details of the data base, generic procedures and problems, and specific examples of copper artifact sourcing are presented.

Ratto, Norma (University of Buenos Aires): [22] (see Lanata, José Luis)

Raymond, J. Scott (Calgary)

[127] **The Beginnings of Sedentism in Northwestern South America**

This paper compares and evaluates the current archaeological evidence of sedentary life among the early Formative lowland societies of Ecuador, Colombia, and Panama. Although there are still significant points of incomparability among the data sets, recent regional surveys, site settlement studies, paleobotanical and archaeofaunal reports, and human skeletal paleodietary research now make it possible to compare the early indications of sedentism in the three countries. Sedentary behavior will be examined from social and economic perspectives. Common patterns—not apparent as recently as a decade ago—can be discerned; however, with the rapidly expanding base of knowledge about lowland human ecology, generalizations we are tempted to make will probably have a short life span.

Reanier, Richard E. (Reanier & Associates)

[61] **Obsidian Hydration Dating: The Alaskan Experience**

After more than three decades of experimentation, obsidian hydration dating remains a promising but by no means routine dating method for arctic archaeologists. The 1970s saw limited success in constructing radiocarbon-calibrated hydration rates. In the 1980s, thermal cells were first used to measure EHT, and activation energies derived from induced hydration were used to develop hydration rates, but erratic results pointed to hydration rind measurement error and the influence of forest fire as causes. Recent research suggests that within-source activation energy variability, and the limits on rind measurement precision imposed by optical microscopy may limit the usefulness of hydration dates in arctic environments.

[121] (see Hall, Edwin S.)

Redder, Albert J.

[9] **Small Game Hunting in the Paleoindian Components at Horn Shelter No. 2, Texas**

This presentation will show the overwhelming amount and diversity of small game animals used in the Paleoindian levels at Horn Shelter No. 2, Bosque County, Texas. Most of this evidence is found in and around small fire hearths.

Redding, Richard (Michigan)

[109] **A Piece of the Flock: Early Domestic Animals as Insurance**

Applying Wright's concept of adaptive topographies to the origin of food production suggests that two types of selective pressures must have been operating. One acted to depress the fitness of hunting-gathering. The second acted to raise the fitness of intermediate subsistence behaviors. If the maintenance of small numbers of plants/animals was favored as insurance against resource failure this would have acted to raise the fitness valley between hunting-gathering and food production. Faunal data from three Epipaleolithic-early Neolithic sites in Turkey, Egypt and China are examined to assess the role of early domesticates in assuring subsistence security.

[84] (see Rosenberg, Michael)

Redman, Charles L. (Arizona State): [109] (see Watson, Patty Jo)

Reed, David M. (Pennsylvania State)

[73] **Maya Diets at Late Classic Copán**

New paleodietary inferences are presented for the ancient Maya at Copán, Honduras. Stable carbon and nitrogen isotopic values of bone collagen from human and faunal skeletons dating to the Coner phase (A.D. 700-1250) have been assayed. Intrapopulation differences are examined by grouping the results by divisions in social status, sex, and age at death. Within the Copán polity differences between some subgroups are evident. The average diet of adult men and women differ. Elites had more varied diets than commoners. The mean results for the adults equal -9.2% for carbon and 7.5% for nitrogen.

Reed, Judy (National Park Service)

[29] **The Face of the Looter**

The National Park Service has had a small group of investigators focused full time on prosecuting cultural resource violators for the past four years. About one-quarter of the 200 cases opened for investigation have travelled through the complete legal web of adjudication. These cases and

interviews with looters, dealers, and collectors have provided a data base from which we can better understand, and therefore address, the social and attitudinal perspectives of looting behavior.

Reed, Paul F., and Nathaniel Todea (both, Navajo Nation Archaeology Department)

[67] **The N33 Road Project: Archaeological Data Recovery Within a 100-Foot Right-of-Way** Significant Anasazi remains, including the Cove Anasazi Community, have been documented along the N33 road right-of-way (ROW) during work on the Cove-Red Valley Archaeological Project. Because archaeological mitigation is restricted to a 100-foot-wide ROW, however, the majority of intact remains will not be investigated. Although a narrow ROW apparently provides for greater protection of resources, impacts from construction will extend beyond the ROW. We explore different approaches relating to the investigation and protection of significant Anasazi remains present along the N33 road and discuss these vis-à-vis limitations of ROW-based excavations.

Reese-Taylor, Kathryn (Texas-Austin): [94] (see *Mitchum, Beverly A.*); [94] (see *Liss, Ken*)

Reese-Taylor, Kathryn (Texas-Austin) and *Paul Cackler* (Missouri)
[94] **New Interpretations of the Structure 6 Complex at Cerros, Belize**

New excavations at Cerros have revealed a large altar stone with cut holes associated with Structure 6, a truncated platform. Eight superstructures are located atop the platform and are situated in the cardinal and intercardinal directions: a plan identical to the North Acropolis at Tikal. The largest superstructure has yielded remnants of masks and a cache of six jade diadem jewels, and recent excavations have recovered a flower element from a small building in the front, center of the platform. Together the altar stone, the iconographic elements, and the arrangement of the structures make a statement about the function of the complex during the Late Preclassic.

Reichle, Beth A. (Emory): [136] (see *Hunter, Andrea A.*)

Reid, J. Jefferson (Arizona), *Barbara K. Montgomery* (Statistical Research), and *Charles R. Riggs, Jr.* (Arizona)

[85] **Dynamics of Pueblo Architecture**

Extensive survey and intensive excavation in the Grasshopper and Q Ranch regions of east-central Arizona permit a full description of architectural changes from small pueblos of up to 20 rooms to large, aggregated pueblo communities of 500 rooms. Factors responsible for changes in construction techniques, in partitioning space, in allocating activities, and in community layout plan are discussed.

Reilly, F. Kent (Southwest Texas State): [64] (see *Garber, Jim*)

Reindel, Markus (Universitat Bonn)

[130] **Investigation of Puuc Chronology: The Xkipché Archaeological Project**

The small site of Xkipche near Uxmal has been chosen for the investigation of architectural, settlement and ceramic aspects of the Puuc chronology based on excavation data. Detailed analysis of the entire settlement and excavation mainly in the palace area have revealed a long sequence of construction activity including evidence of building continuity reaching from the Classic into the Postclassic Period. A remarkable change from high quality masonry to a very simple type of buildings took place in late times. The evidence suggests that dramatic changes occurred in this period but the site was not abandoned.

Reinhard, Karl J. (Nebraska): [30] (see *Brenton, Barrett P.*)

Reinke, Rita (Massachusetts-Amherst)

[102] **The Creation of Identity: The Hinsdale and Anna Williams House**

The Hinsdale and Anna Williams House in Deerfield, Massachusetts, presents a facade of almost perfect Federal styling with an interior approximating rural high style. The Williamses, in their 1816-1820 remodeling of the old Hinsdale house, used contemporary styling with some rather startling aberrations. This paper will use documentary, archaeological, and architectural data to explore the Williamses' ambivalence regarding the changing social and economic conditions of western Massachusetts in the early industrial period.

Reitz, Elizabeth J. (Georgia)

[89] **Environmental Change at Ostra Base Camp: The Vertebrate Faunal Evidence**

Vertebrate remains from the coastal Peruvian site of Ostra Base Camp (4550-3050 B.C.) suggest the marine environment has changed since the site was occupied. At other preceramic coastal Peruvian sites vertebrates are primarily fishes typical of the warm-temperature zone predominate today; however, the Ostra collection includes a large number of warm-tropical or estuarine species. This suggests a warm embayment was present near the site in the past, although today the nearest

such embayment is 400 km north of the site. It seems likely that coastal waters were warmer in the past than they are today.

[38] Participant

Rhode, David (Desert Research Institute, Reno)

[61] **Thermal Variation and Obsidian Hydration Rates**

Since the rate of obsidian hydration depends on temperature, and since the thermal environment experienced by artifacts varies considerably even over small spatial scales, it should be expected that hydration measurements from an artifact collection will also show significant variability. Differences in thermal regimes within a small area may easily result in differences in short term hydration rates on the order of 100%. Whether these rate differences hold over longer periods depends on the stability of the small scale thermal regime. Simulation modelling and empirical measurements are used to assess long-term hydration rate variability at Yucca Mountain, southern Nevada.

[43] (see *Hooper, Lisa M.*)

Rich, Michelle E. (Cerros Cooperative Archaeological Development Project) and *Elizabeth Muenich*

[94] **Investigation of Early Classic Ritual Behavior at Cerros through Ceramic Analysis**

Prior archaeological research at Cerros, Belize, has established the occurrence of dedication and termination rituals involving the Late Preclassic monumental architecture. Recent data may be suggestive of similar ritual activity during the Early Classic period. Through the examination of ceramic evidence obtained from Structure 4B during the 1993 and 1994 field seasons, this paper explores the possibilities of continuous ritual behavior at Cerros.

Richardson, James B.

[89] **Mangroves of the Peruvian North Coast: Climate and Cultural Adaptations in the Holocene**

There has been dramatic change in climate on the Peruvian north coast from the Late Pleistocene (14,000 B.P.) through the Middle Holocene (to 5,000 B.P.). In the Early and Middle Holocene, the north coast, from the Sechura Desert to Tumbes was fringed by a mangrove environment, as was the Santa Elena Peninsula of Ecuador. This paper will discuss the implications of Holocene climate change and the disappearance of mangrove resources on Pre-ceramic-settlement subsistence strategies of this region.

Ridings, Rosanna (Washington-St. Louis)

[61] **Modeling Subsurface Temperature and its Effect on Obsidian Hydration at Pot Creek Pueblo**

A field study from Pot Creek Pueblo in northern New Mexico indicates that obsidian hydration dates may contain significant errors when hydration rate constants are extrapolated to depth-specific effective hydration temperatures (EHTs). This problem is most likely to occur when the amplitude of the annual surface temperature wave exceeds 2-3°C. Based on the large number of tree-ring dates for Pot Creek Pueblo, artifact burial histories have been modeled to account for a 3°C change in EHT with depth. Only 57% of the hydration age estimates are within the expected range, suggesting that sources of error in obsidian hydration dating are still poorly constrained.

Rieth, Christina B. (SUNY-Albany)

[14] **Cultural Interaction During the Carpenter Brook Phase**

This poster will discuss cultural interaction during the Carpenter Brook phase (A.D. 1000-1100) in the upper Susquehanna River Valley Drainage. A series of ceramic assemblages will be analyzed, using ceramic attribute analysis and trace element analysis, to determine with whom early Owasco groups interacted, the extent of such interactions during the Carpenter Brook phase, and the significance of such interactions for understanding prehistoric behavior in the region. Comparisons with contemporaneous Owasco sites located outside of the Upper Susquehanna River Valley will be discussed to further understand cultural interaction during this time period.

Riggs, Charles R. (Arizona): [85] (see *Reid, J. Jefferson*)

Riley, Thomas J. (Illinois-Urbana/Champaign)

[33] **Muddles and the Middle: Cultivars and Cultivation in the Mid South and Middle Mississippi Regions of Eastern North America During and Before the Middle Woodland Period**

Evidence for the maize in the Middle Mississippi Valley of eastern North America in the centuries bracketing the common era force examination of the time of introduction of maize and reevaluation of models. Sears's offers initial maize introduction from the south during Early Woodland with later introduction of maize from the Southwest, while Smith offers unitary southwestern introduction after indigenous domestication supporting an increasingly sedentary population and a ranked society.

Evidence from mid-continent suggests that both models are incomplete. Introduction of maize before the Hopewell Interaction Sphere seems likely, but maize disappears in the Middle Mississippi Region until the development of Emergent Mississippian. Maize is grown from Middle Woodland times through Late Woodland in the mid-South.

Rindos, David (University of Western Australia): [22] Discussant

Riordan, Robert V. (Wright State)

[104] **Hilltop Earthworks and the Archaeology of Functional Ambiguity**

During the Middle Woodland period, earthwork enclosures were constructed at both river valley and hilltop locations in southern Ohio. Since the early nineteenth century, both have attracted their share of archaeological investigations. While the riverine sites have been routinely interpreted as ceremonial, hilltop sites have been variously viewed as defensive, ceremonial, or both, largely on locational and morphological grounds. Results from recent excavations at the Pollock Works as well as other hilltop enclosures are cited in illustration of the real problems that exist in pinning a functional label on these sites.

Rivera, Mario A. (see also *Shea, Daniel E.*)

[49] **The Azapa Sequence Within the South Central Andes: A Revision of Dauelsberg's Contributions**

Percy Dauelsberg's main accomplishments with respect to the Archaeology of northern Chile began in the 1960s when he proposed the first and most comprehensive ceramic sequence for the area. Thirty years later, new research, mostly following Dauelsberg's initiative, is contributing to shape a master sequence that is being used as a main reference for all the south-central Andes.

Robb, John (Michigan)

[76] **Tracing Social Change with Skeletal Markers in Prehistoric Peninsular Italy**

Skeletal biology provides many insights into what life was like in the past. This paper summarizes original and published data on skeletal indicators of social interest in central and southern Italian populations from the Neolithic through the Iron Age. Biological phenomena reviewed include: cranial and postcranial trauma and violence, pathologies, dental health and diet, enamel hypoplasia and childhood stress, and metric and nonmetric indicators of activity. A number of trends in these indicators can be related to prehistoric gender roles, economic and social changes and the rise of complex urban societies in Italy.

Roberts, Michael E. (Timelines, Inc.)

[108] **Reaffirming the Promise**

As the concept of public archaeology developed into what we today call conservation or compliance archaeology, a promise was made and left unfulfilled. It is important to keep that promise or risk becoming irrelevant. The promise was to involve the public and to "give orientation to the American people." What has happened is that students of public or conservation archaeology learn how to do archaeology with public money, but not how to do archaeology for the public. This paper explores the history of this development, speculates on its consequences, and recommends changes that will reaffirm the promise.

Robertson, Ian G. (Arizona State)

[47] **Thematic Mapping of Empirical Bayesian Parameter Estimates at Teotihuacan, Mexico**

The sheer volume of data collected by the Teotihuacan Mapping Project makes many traditional approaches to spatial analysis unwieldy or impossible. A GIS integrating a wide variety of spatial, artifactual, and architectural information from Teotihuacan has recently been created, and is providing a platform for new and highly informative types of analysis. This paper concentrates on ways in which thematic mapping functions are being combined with methods of empirical Bayesian parameter estimation, in order to provide better and more reliable inferences about spatial patterning within the ancient city.

Robichaux, Hubert R.

[13] **Settlement Survey in the Peripheral Zones of the La Milpa and Dos Hombres Sites in NW Belize**

Mapping and excavation in the peripheral zones of the La Milpa and Dos Hombres sites in Northwestern Belize has provided evidence on the nature of ancient settlement there. The data suggest that population densities were high in the Late Classic Period. Siting seems to be based upon facilitation of agriculture.

Robinson, David Earle (National Museum, Copenhagen) and *Peter Hambro Mikkelsen* (University of Aarhus)

[128] **Subsistence and Agrarian Economy at Smedegaard, Thy, Denmark: An Early Iron Age Settlement**

In 1992-1993, a rescue excavation on a characteristic "tell" at Smedegaard in Thy, revealed stratified remains of turf-built houses spanning the last two centuries of the pre-Roman Iron Age (200-0 B.C.). For the first time in an excavation of this nature, large numbers of soil samples were collected from floor layers, refuse layers and pits. Many samples proved to be rich in carbonized plant remains, providing us with a wealth of information about change and continuity in the subsistence economy of the Early Iron Age, with implications reaching far beyond the wind-swept hilltop of Smedegaard.

Robinson, Lind Sickler: [115] (see *Lundberg, Emily R.*)

Robison, Mary (Massachusetts-Amherst)

[102] **Geophysics and LALSAR (Low Altitude Large Scale Reconnaissance) at the Moors Homelot, Deerfield, Massachusetts—Excavation Results**

Geophysical archaeological surveys (magnetometry and electrical resistivity) and low-altitude aerial reconnaissance were conducted at the Moors Homelot, in Deerfield, Massachusetts. These nondestructive surveys are rarely used for reasons which have little to do with their utility. Interesting features were located with all three methods. The survey results were used for invasive investigation of landscape change. Excavation revealed massive landscape alteration suggested by the remote sensing, but not anticipated prior to excavation.

Roczek, Thomas R. (Delaware)

[30] **Fine Scale Resolution in Archeological Chronometrics: Historic Navajo Dendrochronology**

The forced relocation of Navajos in 1864-1868 and the 1918-1919 influenza pandemic are precisely dated, catastrophic short duration events. Dendrochronological analysis from Black Mesa, Arizona shows how individual tree-ring samples, samples pooled by structure, and samples pooled by site, yield complementary data on these events. The combination of these analytical levels yields fine scale resolution (by pooling dates for precision) but retains a large sample size (by counting individual tree-ring dates). The paper demonstrates the methodological advantage of multiscale analysis and also documents the course of two cataclysmic periods of Navajo history.

Roe, Peter G. (Delaware)

[127] **The Raptor Motif in Prehistoric Chavin and San Agustín Sculpture: Dynamic Dualism in Two Early South Amerindian Art Styles**

This paper, patterned after Reichel-Dolmatoff's (1972) "The Feline Motif in Prehistoric San Agustín Sculpture," combines close visual analysis of ancient monuments with ethnographic analogy derived from participant-observation fieldwork. In keeping with Reichel's hermeneutical approach to oral tradition and ethnic art, it compares the pattern of dynamic dualism readable from the visual organization of the Raptor figures at Chavin de Huantar, Peru, with thematically similar monuments from San Agustín, Colombia, and with the lowland ethnosemantics of projectiles and ritualized raiding derived from my own Shipibo research. Continuity, not discontinuity, marks the widespread and enduring symbolism of South Amerindians. Common cosmological models once spanned what are now compartmentalized highland/lowland ecosystems. The componential analysis of stylized figural prehistoric styles elucidates the parallels that Reichel noted between San Agustín and Chavin.

Rogers, Anne F. (Western Carolina)

[80] **The Role of Information Sharing in Archaeological Resource Protection**

Protection of archaeological sites has become an increasingly important aspect of law enforcement in Federal agencies. An important component of this responsibility is sharing information, whether within agencies, across agencies, or with outside parties such as archaeologists, non-federal law enforcement personnel, and the public. Archaeologists in particular are an important component of this network. This paper suggests ways in which communication can be best effected in each of these situations, and also proposes mechanisms by which archaeologists and law enforcement officers can improve the flow of information across professional boundaries.

Rollan, Julio: [72] (see *Caruso-Wessel, Terri*)

Rolett, Barry V. (Hawaii)

[69] **Voyaging in Polynesian Prehistory: A View from the Marquesas**

Voyaging and cultural change are inextricably linked themes in the prehistory of Oceania, a region in which the open sea created both barriers to, and the means for intercommunication. A new model

proposes that two-way voyaging linked distant archipelagoes in early periods of East Polynesian prehistory, creating a regional homeland sustained by interaction. It is further argued that a later decline in voyaging led to the increasing isolation of individual islands, and the concomitant divergence of cultures descendant from a single ancestral tradition. This hypothesis is examined in light of recent archaeological field work in the Marquesas Islands and geochemical evidence for the interisland transportation of raw materials and finished artifacts.

Rollefson, Gary O. (Peabody Museum)

[84] **Ritual and Social Structure at Neolithic 'Ain Ghazal**

Eight excavation seasons at 'Ain Ghazal have produced an extensive range of information that relates to ritual, religion, architecture and, by inference, social organization for the more than 2,000 years of continuous occupation at the settlement (9300-7000 B.P., uncal). Clay figurines and lime plaster statuary, postmortem treatment, and architecture suggests a three-tiered socio-religious hierarchy for the late 10th and 9th millennia B.P. that may have been associated with corporate kinship organization. In the 8th millennium aceramic and ceramic Neolithic, this pattern altered dramatically, indicating cultural adaptations that might be attributable to a degraded environmental setting.

[95] Discussant

Rollins, Harold B. (Pittsburgh), *Gregory Ayres* (Pittsburgh), and *Daniel Sandweiss* (Maine)

[89] **Are Inhabitants of Cross-Latitudinal Coasts More Frequently Impacted by Short-Term Climatic and Resource Perturbations? A Model for Decadal- to Millennia-scale Fluctuations of Climate, Sea Level, and Fishery Resources**

Thermally anomalous molluscan assemblages (TAMAs) have been historically responsible for fluctuation in fisheries resources along the coast of South America. Cross-latitudinal coastlines appear particularly susceptible to such resource change. The model posed by Fletcher et al. (1991) for coupling the Gulf Stream current, climate, and sea level appears applicable to many other cross-latitudinal coasts. An increase in latitudinal thermal gradient triggers intensification of the current which results in small-scale lowering of sea level and displacement of thermally restricted species. Effects may vary in temporal scale from decades to millennia, and may be synergistic with other controls of sea level.

Rondeau, Michael F. (Rondeau Archaeological)

[28] **Technology as Context for Obsidian Hydration Studies**

Anomalous hydration band width readings have plagued interpretative endeavors and called into question the general utility of obsidian hydration as a method of establishing relative chronologies. Recent techno-hydration studies indicate that certain kinds of anomalies can be explained. New interpretive benefits from combining technological and hydration analyses are recognized. It is argued that some unexplained results follow from a failure to establish context and, therefore, appropriate controls for sample selection.

Root, Matthew J. (Washington State)

[28] **Production for Exchange at the Knife River Flint Quarries, North Dakota**

A methodological problem in debitage analysis is determining the origin and composition of mixed assemblages. I use multiple linear regression to estimate the technological composition of debitage assemblages from the Benz site (32DU452A), a workshop in the Knife River flint (KRF) quarry area, North Dakota. Multiple regressions were calibrated using 205 replications of KRF tool manufacture. Estimates of the technological composition of debitage assemblages allow estimation of the numbers of tools manufactured. Results suggest that tool production was most efficient during the late Paleoindian and Late Archaic periods, and that pan-time specialist flintknappers made tools for exchange during these times. There is no evidence of production for exchange during the Early and Middle Archaic periods.

[70] (see *William, Jerry D.*)

Rose, John J. (Pittsburgh)

[73] **King Kong Meets the Stratified Random Sample: Sampling Settlement in a Jungle Environment**

Locating randomly selected data collection units in the field can be difficult task. This is especially true in settlement studies that cover many square kilometers. This presentation describes the techniques used by the La Milpa Archaeological Project in implementing a stratified random survey program in a densely forested and topographically challenging area of northwestern Belize, Central America. Fieldwork design also had to take into consideration the impact of archaeological fieldwork on a sensitive natural area as well as the concerns of botanists, biologists, and other specialists not involved in archaeological research.

[52] (see *Tourtellot, Gair*)

Rosebrough, Amy L. (Wisconsin-Madison)

[110] **A Functional Analysis of Ceramics from the Helb Site: Pots, Paints, and Polish**

Ceramics recovered from the Helb site during three decades of research are described and analyzed from a functionalist standpoint. The division of the Riggs ware into types on the basis of rim decor is seen to be unrelated to site use-categories. Instead, Kliensasser's original proposal that the ware should be divided on the basis of rim form is upheld. The Helb potters are also shown to have been attempting to correct deficiencies in both types of morphologically typed Riggs ware by thinning them over time. The people of Helb also appear to have been imitating Goalescent pottery forms.

Rosen, Arlene Miller (Calgary)

[131] **Phytolith Evidence for Mousterian and Epipaleolithic Plant Exploitation at Hayonim Cave, Israel**

Little is known about the paleoethnobotany of Mousterian people in the Levant due to the scarcity of macrobotanical remains at these sites. Recent studies show that phytoliths are abundant at cave and open air sites from this period. Hayonim Cave has yielded phytoliths from both Mousterian and Epipaleolithic periods which allow comparisons of plant exploitation patterns between the two. After preliminary investigations, it appears that one of the most significant differences in plant use is the focus on woody plants by the Mousterians, primarily for fuel, and the predominance of monocots in the Epipaleolithic, presumably for manufacturing artifacts, and foodstuffs.

Rosen, Steve (Ben-Gurion University-Israel)

[28] **Craft Specialization and Pastoral Nomadism: The Analysis of Microlithic Drills from the Camel Site**

Evidence for specialized and semi-specialized manufacture of beads in the protohistoric periods in the southern Levant, in the form of microlithic drills and beads in various states of completion, is known almost exclusively from culturally peripheral desert sites. Some of these sites contain thousands of microlithic drills. Recent excavations at the Camel Site, an Early Bronze Age pastoral encampment in the Central Negev, revealed an activity area with over fifty drills. The coincidence of bead production with the pastoral periphery, along with other lines of evidence, suggests that early pastoral nomadic adaptations should be viewed as multiresource based.

Rosenberg, Michael (Delaware) and *Richard W. Redding* (Michigan)

[84] **Hallan Çemi, Feasting, and the Beginnings of Animal Domestication in Highland Southwestern Asia**

Hallan Çemi represents the remains of a sedentary, complex hunter-gatherer society that inhabited the flanks of the Taurus in eastern Anatolia ca. 10,000 years ago. The Hallan Çemi data are in many ways consistent with recent models that use competitive feasting or other social forces to drive the process of plant and animal domestication. This paper examines these data in the broader context of the site and its environment with the aim of evaluating the general validity of such models.

Ross, Louis (Missouri): [14] (see *Cogswell, James M.*)

Ross, William A.

[51] **The Interlakes Composite: Projectile Point Styles and Raw Material Through Space and Time**

This paper will examine the late Paleoindian occupation of the Superior Basin in terms of projectile point styles. Discussion will center on the wide variety of projectile point styles that are present in the composite and will suggest a possible time sequence. Differences in raw materials utilized throughout the area will also be discussed.

Rossen, Jack and Tom D. Dillehay (both, Kentucky)

[89] **Spatial and Temporal Transitions in the Zaña Valley, Northern Peru (8000-4000 B.P.)**

The Pajjan to Nanchoc transition in the Zaña Valley, northern Peru, was both a temporal and spatial phenomenon, marked by territorial differences and shifts in economy, technology, and settlement pattern. A highly mobile, technologically less varied and economically specialized culture gradually gave way to more permanently localized cultures with more varied technologies and economies. A broad characterization of this change must also consider 1) differences in the spatial ranges of Pajjan and Nanchoc cultures, 2) transitional technologies located at the boundaries of those ranges, and 3) the degraded preceramic cultures that followed the "Nanchoc florescence."

Rossen, Jack (Kentucky): [63] Discussant

Rostoker, Arthur (CUNY-Graduate Center)

[112] **Ceramic Provinces in the Prehistory of the Ecuadorian Oriente**

Comparative analyses aimed at determining the relationships among pottery assemblages recovered

from sites being investigated south of the Rio Napo in Ecuador are hampered due to the often marginal preservation of even ceramic material in the moist or wet tropical forest. The original surfaces of many sherds are heavily damaged, rendering popularly diagnostic attributes such as mode of vessel decoration difficult to ascertain. An approach emphasizing comparisons in terms of technological variability—including paste classes and building techniques—as well as accurate recognition of vessel forms, seems more likely to help us define the boundaries of prehistoric ceramic provinces there.

Roth, Barbara J. (Oregon State)

[126] **Looking for Change in All the Wrong Places: Emerging Sedentism in the Southern Southwest**

Numerous semisedentary Late Archaic villages have been documented in southern Arizona within the last decade. These villages are located adjacent to permanent water sources and arable land. All sites have evidence of cultigens, suggesting that agriculture was associated with emerging sedentism. Most researchers working in this area have attempted to explain these changes in adaptation using data from Late Archaic sites. I argue that these changes cannot be explained by examining villages where the changes have already occurred. Middle Archaic sites may provide more pertinent data on the process of and reasons for settling down.

Roux, Valentine (CNRS-ERA 28), *Blandine Bril* (EHESS, Paris), and *Gilles Dietrich* (INSEP, Paris)

[124] **Skills Involved in Stone Bead Knapping: An Approach to Socio-Cultural Actors from the Indus**

In order to interpret technological choices in relationship with the symbolic system in which it takes place, one should be able to define objects not only in terms of technical and physical parameters, but also in terms of motor and cognitive skills. The study of skills requires an actualist situation and a methodology such as the one developed by psychology. The case study here presented relates to stone bead knapping in Khambhat (India). Skills are studied in terms of learning difficulties and duration of apprenticeship. Results of our study, applied on third millennium stone beads from the Indus Valley, enable us to differentiate stone beads in terms of knappers' specialization and intrinsic symbolic value.

Roveland, Blythe (Massachusetts-Amherst)

[60] **In the Eye of the Beholder: Changing Views of Hamburgian Variability on the Northern German Plain**

In this paper, I assess the criteria by which archaeologists, past and present, have identified, measured and given meaning to intraregional variability of a particular time and place. I investigate the Hamburgian, the oldest late-glacial cultural complex on the northern German plain, which was first identified in the 1930s. Since then archaeologists have sought to understand the lifeways of these Late Pleistocene hunter-gatherers. Through a critical history of this research, I explore the factors that may have influenced the recognition and explanation of variation between northern German Hamburgian sites. Those factors include changing research priorities, methods, and assumptions about hunter-gatherers.

Rovner, Irwin (North Carolina State)

[131] **Mien, Mean, and Meaning: Limits of Conventional Typology in Phytolith Analysis**

Conventional typology, based on convenient reduction to simplified "typical" forms, currently dominates phytolith classification and may ignore real variation. Far less success has been achieved in the development of phytolith typologies at the species level. Visual tests, at both high and much higher magnification, have revealed basic perceptual, methodological and mathematical errors resulting in false types used in the interpretation of archaeological phytolith assemblages. Successful identification of maize phytoliths in the archaeological record requires new approaches to visual identification and classification of phytoliths at the species level.

Rowe, Marvin W., and *Marian Hyman* (both, Texas A & M)

[17] **Chemical Studies of Pictographs**

We present a progress report on our chemical studies on pictographs. The direct radiocarbon dates obtained in our laboratory will be discussed with emphasis on the newer measurements. Our attempts to utilize polymerase chain reaction and phylogenetic analysis of DNA from ancient Pecos River style pictographs from Texas will be given, with a brief discussion of how we are trying to narrow the findings from order *Artiodactyla* to species designation. Mention of scanning electron microscopy studies of the microstratigraphy will also be made.

Rowlett, Ralph M. (Missouri-Columbia)

[119] **Hypothesis Testing by Structural Analysis of Iron Age Bog Burials**

Structural analysis of social and cultural elements can be regarded as a useful heuristic device, but has also raised doubts if the contrasts reported are in the society or culture studied or in the mind of the observer, perhaps reflecting even the physio-anatomical structure of the human brain. During the past decade it has been realized that some La Tene Celts, at least the Insular ones, like the Germanic-speaking peoples of the North European Lowland areal culture, made occasional dispositions of executed individuals in peat bogs. Questions have arisen as to which cultural group instigated this practice. Structural analysis reveals in which culture the practice is the most patterned, integrated and deeply rooted, thus indicating the most likely origin for the burial rite.

Rue, David (Archaeological and Historical Consultants, Inc.) and *Nicholas Dunning* (Cincinnati)

[52] **Preliminary Palynological Results from a Core from Laguneta Tamarindito, Peten, Guatemala**

A core was extracted from near shore in a small lake near the Maya sites of Dos Pilas, Tamarindito, Punta de Chemino, and Aguateca as part of the multidisciplinary studies of Vanderbilt University's Petexbatun Regional Archaeological Project. An excellent suite of radiocarbon dates was obtained. The radiocarbon age for humate materials from 220–230 cm = 9390 ± 110 B.P. An AMS date of 6460 ± 60 B.P. was obtained from a wood fragment found at 180 cm. The span of dates between and above the referenced dates are consistent. The data is the first information on pollen zonation and Maya land disturbance in the region.

Ross, Louis (Missouri): [14] (see Cogswell, James M.)

Ryan, Jack Edwin (Southern Illinois-Carbondale)

[131] **Recovery of Identifiable Phytoliths from Groundstone Artifacts and Human Dentition using Scanning Electron Microscopy**

It has been demonstrated that silica phytoliths can be recovered in archaeological context, and more specifically from archaeological stone implements such as flint hoes. Additionally, it has also been demonstrated that silica phytoliths can be recovered from fossil mammal and extant mammalian dentition. I propose that silica phytoliths can be photographically recovered using scanning electron microscopy from groundstone artifacts and human dentition. These silica phytoliths appear to be covalently bound to the surface of the artifacts and to the calculus of the human dentition. Current research theory and methodology has yet to reach its full potential; however, this approach to the analysis should increase the rigor of the behavioral and cultural ecological inferences made from phytolith analysis.

Sacchini, Dominique: [60] (see Price, Heather)

Sackett, James (UCLA): [62] Discussant

Saenz, Karen E. (CSU-Northridge)

[15] **Indigenous and Academic Concepts of Labor in Hunter-Gatherer Studies: Ethnoarchaeological Perspectives from Northern Australia**

Drawing upon recent ethnoarchaeological fieldwork among Wardaman-speaking Aborigines in northern Australia, this paper first contrasts indigenous concepts of 'labor' and 'surplus labor' with those Western academic labor concepts frequently found in archaeological analyses of complex, stratified social groups. Next, indigenous labor concepts are evaluated for their actual and potential visibility in the archaeological record. Finally, the paper concludes with a general discussion of the heuristic value of Western academic labor concepts for Fourth World hunter-gatherer studies in archaeology.

Saidel, Benjamin A. (Harvard)

[119] **Pastoralism in the Early Bronze Age: The View from Har Nafha 396.**

Excavations at the site of Har Nafha 396, in the Negev desert, Israel, contribute new information on the lifeways of pastoral peoples. Analysis of the ceramics and lithics suggest that this encampment was occupied during Early Bronze I/II and Early Bronze IV/Middle Bronze I periods. Petrographic, faunal and phytolith studies have been conducted to determine seasonality and patterns of exchange and movement. The information derived from this excavation can be integrated with similar sites in the arid zones of the southern Levant and Sinai to provide a better understanding of the populations residing in these regions.

Salgado, Sylvia, and *Wilson Valerio* (both, Museo Nacional de Costa Rica)

[90] **Lithic Industries of the Region of Granada, Pacific Nicaragua (A.D. 300–1550)**

This paper discusses the results of the analysis of ground and chipped-stone artifacts recovered in stratigraphic excavations of the Ayala site, Pacific Nicaragua. Most of the artifacts were made of local chert and basalt, while obsidian artifacts were made of imported materials from sources in

Honduras, Guatemala and Central Mexico. The assemblages suggest that some specialized activities were carried out at the site, owing to the prevalence of certain classes of artifacts. Comparisons are established with contemporaneous lithic industries of other regions of Lower Central America, especially of Costa Rica and Panama.

Salomon, Teresa (Universidad de las Américas): [66] (see *Uruñuela, Gabriela*)

Saltonstall, Patrick (Wisconsin-Madison): [133] (see *Steffian, Amy F.*)

Salzer, Robert J. (Beloit)

[10] **Systematics of Ritual Behavior: A Preliminary Assessment**

Cult shrines ("temples," "sepulchres") are described in the 16th century travelers' accounts for the chiefdoms of the southeastern United States. Prehistoric examples are certainly present in North America but these have not been described in a standardized way. Two such shrines—one from the Early Bronze Age in Crete and one from post-Hopewell to Emergent Mississippian times in the upper midwestern United States—are compared in an attempt to refine and reinforce systematics that will facilitate the identification of other examples and to amplify our understanding of such ritual spaces.

Sammons, Dorothy (Idaho State): [136] (see *Lohse, E. S.*)

Sampson, C. Garth (Southern Methodist)

[12] **Pastoralist and Hunter-Gatherer Space Sharing Strategies in the Upper Karoo, South Africa**

Later Stone Age pastoralist groups penetrated the upper Karoo semi-desert region of central South Africa at by at least 1350 B.P. Resident hunter-gatherers acquired ceramics and livestock, but retained their own lithic tradition. Spatial analysis suggests that the two communities moved seasonally between the same waterholes, but maintained schedules that kept them from having to share the same water points.

Samson, Ross

[128] **Women at the End of the Earth**

Later in the first millennium A.D., Picts lived in the northernmost part of Scotland. Considered mysterious today, contemporaries also saw them as unusual, attributing an important role to women. While the position of women in calculation of royal succession has interested scholars, only recently has it been recognized that women may be better represented on the most mysterious of Pictish artifacts—their hieroglyphic tombstones—than has been suspected. They probably appear graphically without our recognizing them as women and may represent one-fifth of the names recorded on stones. Apparently women had much greater power than in contemporary European societies.

Sanchez, Julia L.J. (California-Los Angeles): [92] (see *Shaffer, Brian S.*)

Sandness, Karin L. (Smithsonian)

[99] **Dietary Analysis of Prehistoric Middle Osmore Drainage Populations of Southern Peru Using Stable Isotopes ($\delta^{13}\text{C}$ and $\delta^{15}\text{N}$)**

Data from carbon and nitrogen isotope values obtained from human bone samples from sites in the Osmore Drainage of southern Peru (ca. A.D. 50 to 1300) indicate both spatial and temporal variability in diet. Specimens from the middle Moquegua Valley are, in general, more negative in both carbon and nitrogen than those of the lower coastal Osmore Valley. Through time, the Moquegua samples tend to have more positive $\delta^{13}\text{C}$ values and less positive $\delta^{15}\text{N}$ values, suggesting increased maize consumption, with particular emphasis on this food source during the Middle Horizon Period (A.D. 700–900). Geographic location and shifts in socioeconomic control are discussed relative to the isotopic data.

Sandweiss, Daniel H. (Maine)

[89] **Climatic Change or Geographic Variation in the Mid-Holocene of Northern Peru: Archaeological and Paleoclimatic Evidence**

The Ostra Site is located near the Santa River on the Peruvian north coast (ca. 9° S latitude) and dates to the mid-Holocene (ca. 6250 to 5400 B.P.). Vertebrate and invertebrate faunal assemblages from the Ostra Site and an associated paleoshoreline are dominated by species now found in warm-tropical waters north of ca. 5° S latitude, while the Ostra region today has a typical warm-temperate fauna. Other mid-Holocene sites south of 5° S latitude also have warm-tropical faunas. Models to account for the anomalous fauna of mid-Holocene northern Peru have stressed either regional climate change or local geographic alterations. These models are compared and evaluated in the context of other sources of climate data, and their differential implications for regional prehistory are

considered.

[89] (see *Rollins, Harold B.*)

Sanoja, Mario

[63] **Historical Region and Regional Archaeological Programs**

The historical region is one of the key concepts in social archaeology to organize and understand empirical data. The awareness that the archaeologists is dealing with sites that represent a former living system of historical and social relations that developed in a given geohistorical space contributes to a better definition of the asymmetric and/or isometric lines of historical development, manifested through the modes of life, modes of work, and the daily context of life. Theory is particularly important whenever possible and relevant to further the study of daily life contexts as well as domestic or territorial space and the social activity of individual groups.

Sassaman, Kenneth E. (South Carolina Institute of Archaeology and Anthropology)

[103] **Social Controls over Resource Expansion and Contraction**

Alliance building and exchange are first-line defenses against subsistence stress among hunter-gatherers. In these same arenas of social action lie the seeds of economic intensification. The dialectic of simultaneously overcoming and creating subsistence stress is exemplified by Late Archaic societies of the American Southeast. The expanded use of shellfish, aquatic reptiles, and perhaps anadromous fish coincides with increased group integration, larger coresident group size, and nonsubsistence production. Diminished use of these resources after 3500 B.P. is traced to variation in the commitment of local groups to extralocal social obligations and the influence this had on group disintegration.

Sather, Dean T. (Museum of Anthropology, Kansas)

[83] **Raw Material Utilization in the Northeastern Plains: A View from the Canning Site**

Analysis of the lithic assemblage recovered from the Canning Site (21NR9) was performed in order to observe and quantify patterned morphological variability in the utilization of differing raw materials. The site is located in a lithic-poor environment and it is suggested that all lithic materials had been transported to the site by its occupants. Individual raw material types may have been selected for manufacture and use as specific technological items. In this analysis, emphasis was placed on identifying the impact the spatial distribution and flaking quality of each raw material had on its utilization within the organization of technology.

[135] (see *Hill, Matthew E.*)

Saucier, Roger (Army Corps of Engineers): [129] (see *Saunders, Joe*)

Saul, Frank P. (Lucas County Coroner's Office): [13] (see *Saul, Julie Mather*)

Saul, Julie Mather (Lucas County Coroner's Office), *Frank P. Saul* (Lucas County Coroner's Office), and *Arturo René Muñoz* (Texas-San Antonio)

[13] **Osteological Analysis of Burials from a Small, Non-Elite Rural Site (RB-11, Programme for Belize)**

Excavations in 1994 at RB-11 resulted in the removal of 10 burials, the largest mortuary population thus far recovered from the Programme for Belize study area. Nine were primary and flexed, eight with head South, one cyst burial with head North. A secondary burial was found in a wall. Field evaluations indicated the presence of four adult males, one adult female with pregnancy "scars" and Romero dental decorations F9 (modified), and one adult possible female with Romero dental decorations B4. Dental decay and attrition were common. Laboratory analysis should provide more specific information about age, sex, health status, and cultural modifications.

Saunders, Joe (Northeast Louisiana), *Thurman Allen* (Soil Conservation Service), *Rolfe Mandel*, and *Roger Saucier* (Army Corps of Engineers)

[129] **Watson Brake: A Middle Archaic Mound Complex (ca. 5300 B.P.)**

Watson Brake (16OU175) is an 11-mound and ridge complex in northeast Louisiana which dates to the Middle Archaic (> 5000 B.P.). The mound and ridges form a circle with a diameter of 280 m. The largest mound is over 7 m high. Test excavations in two ridges and one mound produced six charcoal samples which date between cal. 5300 and 5900 B.P. Pedogenesis in ridge and mound fill supports the inferred antiquity of the site. Watson Brake artifact types are similar to those recovered from Frenchman's Bend (16OU259), a five-mound Middle Archaic complex in northeast Louisiana.

Nearborough, Vernon L. (School of American Research), *Fred Valdez, Jr.* (Texas-Austin), and *Nicholas P. Dunning* (Cincinnati)

[13] **An Accretive Model of Land Water Use for the Ancient Maya of Northwestern Belize**

At least two possible paths exist in the development of early agriculturally based civilizations: 1)

accretive harvesting of resources and 2) expansive exploitation of supplies. Considerable internal variation within a culture was present through time and between geographical zones, though early civilization generally oriented to one of the two resource extraction and processing tracts. In the case of the lowland Maya, punctuated periods of accelerated agrarian growth and sophisticated water control occurred. Nevertheless, an accretive orientation to growth is generally postulated by our research in northwestern Belize.

Scarlett, Timothy (Nevada-Reno): [43] (see *Van Wormer, Heather*)

Scarry, C. Margaret (North Carolina-Chapel Hill)

[93] **Native American Farming Practices in the Late Prehistoric Southeast**

We routinely describe the Mississippian peoples of southeastern North America as maize agriculturalists. While this characterization is reasonable, it is also quite vague. It glosses over the diversity of agricultural strategies pursued by different groups and the complexity of farming practices employed by individual societies. This paper draws on archaeological and ethnohistorical evidence to survey the cropping strategies (e.g., scale of production, diversity of crops, labor and storage practices) of Mississippian peoples and their historic descendants.

Scattolin, Maria Cristina (Museo Etnografico, University of Buenos Aires): [40] (see *Gero, Joan M.*)

Schafer, David K. (New York State Museum): [90] (see *Cascio, Lisa M.*)

Schamel, Kathleen M. (CEHP Incorporated)

[80] **From Taos to Breckenridge: Planning a Successful Conference**

Organization of the Save the Past for the Future Conference for the Society of American Archaeology was a challenge. The planning committee envisioned between 70 and 100 participants gathering to reevaluate the 1989 Taos conference and prepare an action plan for the next decade. As word spread about the conference, over 170 individuals had confirmed their participation. Even with the end of the fiscal year causing last minute cancellations, the Breckenridge Save the Past for the Future conference was a resounding success. This presentation will highlight the conference planning, background, and events leading up to the conference.

Scheiber, Laura L. (Wyoming)

[135] **Burial Archaeology and Research on the Northwestern Plains**

Human skeletal remains from Wyoming and Montana have been studied for the last 50 years. Although not a dominant research interest of many archaeologists, the information gained through the study of mortuary sites has revealed patterns that are consistent with the archaeological record. All known burials from these states were evaluated. Skeletal remains are attributed to every cultural period, although samples from earlier periods are smaller; and dating methods are inconsistent. The data reveal decreasing life spans through time and changes in burial contexts as well as possible evidence for increasing conflict as people migrated to and from the Plains.

Schepartz, Lynne (Cincinnati): [119] (see *Miller-Antonio, Sari*)

Schiavitti, Vincent W. (SUNY-Buffalo)

[21] **The Organization and Timing of Prehispanic Mining in the Chalchihuites Area of Northwest Mexico**

The Chalchihuites area of northwest Mexico is known for the site of Alta Vista and its mining complex aimed at minerals such as cinnabar, weathered chert, pigments, and semiprecious stones. Many scholars associate Chalchihuites mining with Teotihuacan influence. In contrast, this paper presents evidence that places mining in the Epiclassic period (ca. A.D. 650-900). Scale and organization of mining are also discussed. While the scale of mining is quite large, its organizational aspects are relatively moderate. It is suggested that local elites were most directly responsible for the management of mining and its products were primarily destined for exchange within northwest Mexico.

Schiffer, Michael B. (Arizona)

[62] **Social Groups and Social Boundaries: A Behavioral Perspective**

Discussions of social groups and social boundaries in the archaeological literature often conflate emic and etic perspectives. The result is endemic confusion over the meaning of terms and a consequent lack of archaeologically useful theory. This paper argues the necessity of building concepts and principles, pertaining to social groups and social boundaries, on the basis of behavioral phenomena. Some trial formulations are offered.

[85] *Discussant*

Schlanger, Sarah H. (Museum of New Mexico)

[23] **Men's Houses and Women's Places: Gender and Power Relations During the Anasazi Pithouse to Pueblo Transition**

During the transformation of the North American Southwest from a gathering and hunting base to an agricultural economy, informally organized clusters of earth-sheltered pithouses are replaced by masonry apartment complexes. This is the pithouse to pueblo transition. One aspect of this transition—the translation of the domestic pithouse into a men's house and ceremonial chamber—is relatively well known. Changes in women's places are less well understood. This research considers the pithouse to pueblo transition in terms of the changing roles of both men and women in prehistoric Southwest society.

Schmader, Matthew (City of Albuquerque)

[39] **Comparing Late Puebloan Petroglyph Imagery to Other Forms of Artistic Expression**

For many prehistoric systems, there are few material correlates for comparison to rock art images. Prehistoric pueblos in the middle Rio Grande Valley are an exception. Petroglyph sites are found near pueblo villages. Kivas at large villages have been found with wall murals. Comparisons of petroglyphs to wall murals reveals some images are found in both media but many are not. Pictographs add dimensions of color and detail. Certain designs on painted pottery may be found in petroglyphs. Contemporary art forms such as dances and kachina dolls can also be compared to rock art images. Other sources are contemporary pottery, baskets, and blankets; mythology and oral traditions should also be utilized.

[78] **Structure Function and Interior Spatial Organization of Early Puebloan Pithouses in the Middle Rio Grande Valley**

Excavation of 35 early puebloan pithouses (A.D. 650 to 900) north of Albuquerque has revealed several important site structural patterns. Dates have shown that structures of different sizes were contemporary. Smaller structures had more interior features than larger structures. This difference is explained as a separation of food preparation areas from sleeping areas: food preparation occurred in smaller structures. Strong patterning in interior space use was also found. The "back" of the house behind the firepit was consistently clean (maintained space). The front of the house and the edges along the wall margins consistently had many more features and floor artifacts.

Schmidt, Robert A.

[79] **AC/DC in BC? Sexual Orientation in Prehistory**

Archaeological envisioning of prehistoric societies and lifeways has in the past produced explicitly and implicitly heterosexual domains, in which alternative affectional and sexual orientation (third gender) social categories have been virtually invisible. Rumors and press reports alleging the recovery of semen from the anal canal of the body of "Otzi the Iceman" have led to identification by some of Otzi as the earliest known homosexual. Reactions to these reports underscore the contemporary political implications of how archaeologists and other characterize gender relations in prehistory. Archaeologists risk marginalization if their reconstructions of prehistory persist in ignoring the issue of sexual orientation.

Schneider, Kent A. (USDA-Forest Service) (see also *Koonce, Andrea L.*)

[132] **Heritage Management: A Frontier**

As this nation undergoes unprecedented reshaping of behaviors and attitudes about environmental "correctness," the fields of history, archaeology, ethnography and other allied disciplines are undergoing significant change also. A need to manage these resources holistically is being met with the emergence of "heritage management." This higher level review of what is being done in the field to benefit the human agenda will be the focus of this paper. The heritage management need not be an archeologist or historian by specialty. In fact a new kind of manager with a background in planning and the sciences mixed with the history-related industries is being sought. This paper will discuss how the traditional fields of archeology and history can contribute to managing the cultural heritage.

Schober, Theresa M., and Stanley H. Ambrose (both, Illinois-Urbana/Champaign)

[18] **Reinvestigation of Maize Consumption in West-Central Illinois: The Evidence of Bone Carbonate and Collagen**

Stable carbon isotope analysis of bone collagen has been widely employed to investigate the presence of maize in prehistoric midwestern diets. Recent experimental work demonstrates collagen disproportionately reflects the carbon isotope ratios of the protein source while bone carbonate reflects that of the whole diet without discrimination. This study reinvestigates maize use in west-central Illinois with a sample of 89 adults from Late Archaic through Mississippian periods. Stable carbon isotope ratios of collagen and carbonate are examined to determine if the latter provides a more accurate estimate of maize consumption, particularly in Middle and Late Woodland times.

Schrimpf, Marianne Cardale

[127] **Precolumbian Roads in Calima: A Means of Communication Between the Polities of Southwestern Colombia (500 B.C.-500 A.D.)**

Remains of an impressive ancient road system are visible over large areas of southwestern Colombia. The stretches that survive may be as much as 10 m in width and are remarkable for their straightness. These roads were undoubtedly laid out by "engineers" who took every advantage of the terrain to provide the most direct routes through the mountains which must have permitted surprisingly rapid communications between distant regions of the southwest. Although they are not yet securely dated, the evidence available suggests that, in the Calima region, they were in use during the Yotoco period and possibly earlier (early first millennium A.D. and possibly later first millennium B.C.).

Schroeder, Sissel (Pennsylvania State)

[120] **Ancient Landscapes: Late Prehistoric Settlement of the American Bottom**

Large and small sites that were part of a complex society in the Mississippi Valley near Cahokia were surveyed recently. The distribution of late prehistoric sites is strongly affected by local ecological settings, principally wetlands, and by regional sociopolitical conditions, particularly proximity to mound centers. Existing site file data and new fieldwork at 71 sites clarify controversies about the organizational structure of Cahokia-area society during a several hundred year period.

Schroeder, Susan (Loyola-Chicago)

[26] **Creating Kingdoms in Postclassic Mexico: The Importance of Philological Ethnohistorical Interpretations**

Critical to filling lacunae in the archaeological record about the formation and development of indigenous polities in postclassic Mexico are the ethnohistorical records set down by the Nahuas themselves. Among others, Chimalpahin, 17th-century Nahuatl historian, copied and transcribed ancient pictographic manuscripts, collected oral histories from town elders, organized the data, and then set it all down in a Nahuatl-language account that traces from A.D. 670 to the 1630s. Philological analyses of these records then allow the reconstruction of the organization and operation of Nahua *atepetl*, or kingdoms, over an extensive period of time.

Schuldenrein, Joseph (Geoarcheology Research Associates)

[108] **"Am I Old Enough Yet?" Growth Pangs and Identity in Cultural Resources Management**
The CRM profession continues to grapple with some of the most basic questions of mission, purpose, client interaction, public involvement, and ultimately identity. Compared to many other industries, we appear to be lost in the woods. While we are a young profession, in the fast paced Information Age, we need to mature quickly. It is imperative that leaders in CRM establish objectives and feel comfortable in their missions to preserve cultural resources for future generations. Only then will we be able to transmit a sense of professionalism and self worth that will force our clients to consider our "product" to be every bit as valid and significant as more classic commodities.

Schuldenrein, Joseph (Geoarchaeology Research Associates), *Dennis B. Blanton* (William and Mary), and *William Childress*

[87] **Pleistocene-Holocene Contexts in Piedmont Virginia: An Example from Site 44PY152**

A Paleoindian/Early Archaic horizon has been identified in deep alluvial sediments at Site 44PY152 on the Roanoke River in the Virginia Piedmont. Early components are unknown from these contexts in Virginia and they are rarely identified elsewhere in the Piedmont. Limited excavations at the site have documented a depositional history marked by varying rates of alluviation and contrasting soil formation processes. With the results of particle size, chemical, and radiocarbon analyses of the stratigraphic column, the development of the deposit is charted with particular attention to correlation with early human occupation. These results are compared with others from Piedmont settings to model the potential for similar contexts and assess regionwide patterns.

Schwarz, Henry P. (McMaster) and *Christine White* (Western Ontario)

[12] **The Grasshopper and the Ant: Did Nubians Store Their Grain?**

Carbon isotopes in hair of mummies from Wadi Halfa, Sudan show a longitudinal variation in ¹³C/¹²C ratios that spans most of the range expected for consumption of pure winter crops (wheat, etc.) to pure summer crops (millet). The amplitude of the shift suggests that these people were eating whatever was available when it was available, and not using much out-of-season stored food. Implications to the presence of food storage structures and tetracycline banding in bones will be discussed.

Scott, Barbara G. (Minnesota)

[101] **Integrating the Sources from Norse Orkney: Sites, Sagas, and Speculations**

Viking studies have long suffered from the absence of explicit social theoretical and anthropological approaches. Most Viking scholars seldom stray outside the bounds of their own discipline, rarely trying to incorporate data from other types of sources in a satisfactory way. As a result, our picture of Viking society is usually fragments with the parts having little apparent relationship to each other. In this paper, I will use the example of Viking/Norse Orkney to show how data from disparate sources might be woven together using a particular theoretical approach to provide a deeper understanding of that society.

Scott, Elizabeth M. (Zooarch Research) and *Donald P. Heldman*

[125] **Expansion and Imperialism in the Rio Verde Valley of Mexico**

This paper addresses several theoretical and methodological issues confronted by archaeologists of colonialism and imperialism in Latin America. These include 1) the varying degrees of influence on local peoples achieved by an outside empire or state, and, correspondingly, local peoples' resistance to that influence, 2) the degree of cultural and demographic continuity through time, and 3) archaeological evidence of the complexity that characterized imperial, colonial, and post-colonial societies. This paper draws upon archaeological examples and historical evidence of the degrees of Huastecan and Spanish influence in the Rio Verde valley of northeastern Mexico to discuss similarities and differences within preconquest and postconquest Latin America.

Sebastian, Lynne (Museum of New Mexico): [24] Discussant

Seddon, Matthew T. (Chicago) and *Charles Stanish* (Field Museum of Natural History)

[11] **Recent Research on Tiwanaku Influence in the Juli-Pomata Region, Peru**

An ongoing research project in the Juli-Pomata region along the southwest edge of Lake Titicaca, Peru, has revealed evidence for substantial Tiwanaku influence. The region stands just outside of the Tiwanaku heartland, and as such, is critical for understanding the nature of the initial Tiwanaku expansion out of its homeland. Recent reconnaissance, survey, and large-scale excavations enable us to further understand the Tiwanaku movement into and intense control over this zone.

Seifert, Donna J. (John Milner Associates): [74] Participant

Semken, Holmes A. (Iowa): [110] (see *Falk, Carl*)

Senior, Louise M. (Arizona)

[58] **When a Word is Worth a Thousand Pictures: Textual Evidence for Ancient Mesopotamian Ceramic Production Contexts**

Highly detailed cuneiform economic records render Mesopotamia nearly unique among other early states worldwide. Unfortunately, textual sources do not frequently provide data that can be easily incorporated into archaeological analyses of production; however, context, intensity and scale of Mesopotamian ceramic production, as well as elite interests in production efficiency and standardization can be discussed for some time periods (especially UrIII). Strict adherence to Earle's (1981; Costin 1991) definition of "attached specialization" may be too restrictive to account for the administrative variability evident in textual accounts of Mesopotamian production; moreover, the attached context of production may be archaeologically invisible without resource to textual information.

[58] (see *Klucas, Eric E.*)

Sewell, Robin L. (California-Berkeley)

[79] **Afrocentrism and the Presentation of Egypt's Past**

Going back to the ancient Greeks, groups have appropriated Egypt's past for their own uses. Recently, sociologists, psychologists, educators and others have come together with an afrocetric focus to alter the presentation of Egypt's past to primary and secondary schools. Their methods include the use of scientifically invalid concepts such as "race", the citing of outdated materials and themes such as hyperdiffusionism and the selective use of archaeological evidence. Archaeologists must become more involved in the presentation of the past to the general public, particularly school age children, in order to provide a more balanced view of the past.

Shafer, Harry J. (Texas A & M)

[92] **Classic Mimbres Architectural Variability: Households, Lineage Residences, and Roofed Space**

Intensive excavations at the NAN Ruin, SW New Mexico, have documented Classic Mimbres architectural variability and roofed space use. This paper defines and discusses variability in Classic Mimbres households, lineage residences, and their incremental growth through generations, and civic/ceremonial rooms. Households include at least one room with a formal lined hearth. Clustered households formed room blocks or lineages residences which included communal granaries, storage

rooms, and civic/ceremonial rooms. Incremental growth of the lineage residences reveal dynamic changes in the uses of roofed space. Mortuary patterns support the proposed household and room use models.

[9] (see *Hester, Thomas R.*)

Shaffer, Brian S. (North Texas): [30] (see *Gardner, Karen M.*)

Shaffer, Brian S. (North Texas) and *Julia L. J. Sanchez* (California-Los Angeles)

[92] **Mimbres Zooarchaeology: Reflecting Mimbres Culture and Ecology**
The Mimbres-Mogollon of the American Southwest relied on crop complexes for much of their vegetal diet, but also relied heavily on hunting and trapping. Permanent settlement resulted in resource depression of larger animal taxa that could not withstand sustained human predation. This resulted in the predation of smaller animals that could withstand intensive predation. The extent to which small animal taxa were incorporated into the prehistoric food regime is closely tied to the inability of the environment to support viable populations of larger taxa that could withstand the additional human predation.

Shane, Orrin C. (Science Museum of Minnesota)

[83] **The Grand Meadow Quarry: A Major Lithic Procurement Site in Mower County, Minnesota**

The Grand Meadow Quarry, located in Mower County, south-central Minnesota, is a recently identified major source of Rapid Chert, a grey, high quality, crypto-crystalline rock occurring in nodular form within the Rapid Member of the Cedar Valley Formation, a middle Devonian limestone. Rapid Chert was an important regional lithic resource used by Indian people for at least 9,000 years. Recent archaeological surveys and remote sensing have identified quarrying by open-pit mining as the major mode of extraction. Fifteen hectares of pristine open-pit mines, now preserved by the Archaeological Conservancy, remain intact within 50 hectares of former open-pit mining.

Shaw, Leslie C.

[50] **The Importance of Dog in Ritual Feasting in the Maya Preclassic**

Ritual feasting is proposed as an important aspect of emerging complex societies because of its role in building and solidifying unequal social obligations. The use of domestic dog as a food source for feasting during the Maya Preclassic Period will be explored. I present faunal data from sites in Belize and Guatemala to support my argument that the dog, one of the few domesticated species available to the Maya, provided a meat source that could be managed and stored for ritual events. In light of this, I also consider the significance of dog remains in Preclassic burials and caches.

Shea, Daniel E., and Mario A. Rivera (both, Beloit)

[49] **Restricted Percolation and Reticulate Irrigation, A Pseudo-Oasis Niche**

Concerning Ramaditas, in the Atacama Desert. The motive for occupation was ready access to copper deposits, but the extreme aridity made human settlement problematic. A dendritic pattern canal system was not a viable alternative in the local terrain. A possible derivative of the Wankarani complex of Bolivia, Ramaditas was a representative of the Alto Ramirez Phase local to northern Chile. Fossil artesian wells in a reticulated system, with trellislike segments, fits the topography and conserves water.

Sheehy, James J. (Pennsylvania State), *Jennifer E. Kirker* (Pennsylvania State), *Jay Silverstein* (Pennsylvania State), *Tim Sullivan*, and *Lenora Pohlman* (Iowa)

[66] **Proyecto Acatzingo-Tepeaca: A Settlement Survey in the Eastern Valley of Puebla, Mexico**

The Acatzingo-Tepeaca settlement project is an intensive survey of 500 km² in the eastern valley of Puebla. In the first survey season, from June to August of 1994, approximately 85 km² were surveyed and over 300 sites recorded. Sites ranged from ceramic scatters a few meters in diameter to one site about 1.5 km² in size. Chronologically, these sites span the interval from the Middle Formative through the Colonial period. This paper summarizes the settlement data for each period and presents preliminary observations on patterns of demographic growth, agricultural production, and regional interaction.

Sheldon, Craig T. (Auburn-Montgomery): [129] (see *Wesson, Cameron B.*)

Shelley, Phil (Eastern New Mexico): [61] Discussant

Shen, Chen (Toronto)

[71] **Stone Tool Production and Utilization of Princess Point Complex from Southwestern Ontario**

Lithics, both excavated and surface collected from several Princess Point sites along the lower Grand River, southwestern Ontario, are analyzed in order to test the hypothesis that stone tool making and use during the introduction to agriculture to Ontario reflect human behavior in food production. An increase in the use of informal tools and change in related productive strategy illustrate this adjustment of subsistence in southwestern Ontario 1,500 years ago. An explanation of why it happened is offered. The lithic data also inform our understanding of Princess Point settlement along the Grand River.

Shepherd, Deborah J. (Minnesota)

[31] **Religious Beliefs of the Viking Age Finns: Ethnohistoric and Mythic Perspectives on Prehistoric Cemeteries**

The Finnish people of the Viking Age (9th-12th centuries A.D.) left behind several distinct types of cemetery employing disparate funerary rituals and symbolic texts. Comparison of these sites with ethnohistoric data about eschatology and social organization on the one hand and with the preserved oral tradition of pre-Christian myths and heroic tales collected by folklorists on the other suggests an interpretation of the cemeteries which reveals the prehistoric Finns to have been a shamanistic society deeply immersed in a culture of ancestor worship and spirit beings distinct from that associated with the later Saami.

Sheppard, Peter J. (University of Auckland): [61] (see *Stevenson, Chris*)

Shifrin, Lisa (Northern Arizona): [70] (see *William, Jerry D.*)

Shimada, Izumi (Southern Illinois) and *Hirokatsu Watanabe* (Terra Information Engineering)

[136] **Ground Penetrating Radar: Large Scale Application on Coastal Peru**

The relatively dry, homogeneous deposits found on flat surfaces on coastal Peru allow for large scale application and detection of deep remains (over 3 m deep). A Kodak Model KSD-8 was mounted on a sled and pulled across systematic transects (4000+ meter overall length) to test a hypothesized burial pattern and to map buried structures surrounding the monumental temple of Huaca Loro, Peru. Concurrent test excavations improved pattern recognition and depth calibration. This collaborative effort yielded data that point to a planned funerary pattern around the central axis of the temple of a scale heretofore undocumented in South America.

Shlasko, Ellen, and *Nicholas Kouchoukos* (both, Yale)

[14] **Up Above and In the Ground: Site Survey and Settlement Patterns in 18th-Century South Carolina**

During two years of fieldwork at an 18th-century rice plantation in lowcountry South Carolina, the researchers used a variety of on-the-ground survey and remote sensing techniques to establish the history of settlement and land use on the plantation. The results of this study were then compared to information from other plantations in the region. This comparison allowed us to draw conclusions about regional patterns as well as specific details about the site. The poster will present data gleaned from satellite imagery, aerial photography and shovel testing, among other methods, in an integrated approach to site survey.

Shokler, Jeffrey E. (Wisconsin-Madison)

[57] **Mobility and Movement in the Portuguese Upper Paleolithic: A Regional Lithic Sourcing Approach**

Lithic sourcing data recently recovered from 42 geologic flint sources and over 50 archaeological components in central Portugal provide evidence of diachronic variability in Late Pleistocene hunter-gatherer mobility and movement. Definition of geologic flint types and artifact sourcing based on the physical and chemical properties of the materials document changes in hunter-gatherer adaptive strategies corresponding to Glacial Maximum and post-Glacial Maximum conditions in the Portuguese Estremadura. Variability in the presence of nonlocal flints in the archaeological collections suggest a possible shift from residential to more logistical mobility patterns during the Late Upper Paleolithic.

Shott, Michael (Northern Iowa)

[81] **Lithic Reduction Modes at 13HA365, a Middle Woodland Occupation in Central Iowa**

13HA365 is an unplowed "site" overlooking the Iowa River in the Greenbelt of Hardin County in central Iowa. A 1994 University of Northern Iowa field school revealed a Middle Woodland occupation distinguished by zones of dense lithic debris, probably the byproducts of discrete trapping events. In this context, Manker-type biface production can be inferred from the analysis of debris size distribution and patterns of covariation in discrete flake attributes.

Sivert, April: [10] (see *Beck, Lane*)

Siggers, Julian (Toronto)

[95] **The Changing Role of Lithic Technology in the Levantine Late Neolithic: Destandardization or Reorientation?**

With the advent of the Late Neolithic, lithic production in the Levant underwent a dramatic change of direction. Lithic assemblages were no longer focussed on blade technology but on flakes. These flake-based "destandardised" or "expedient" assemblages have received minimal attention, even though they are representative of significant behavioral changes from preceding Neolithic episodes. This paper discusses some of the broader socioeconomic behavioral changes that this reorientation of technology may represent. It applies design theory and tool use optimization as methods for investigating the relationship between lithic production and tool use during this critical phase of Neolithic development.

Silverman, Helaine (Illinois-Urbana/Champaign)

[53] **Paracas Occupation of the Lower Pisco Valley, South Coastal Peru**

Rich Paracas Necropolis burials from the Cerro Colorado and Cabeza Larga sites at the neck of the desert Paracas Peninsula are famous in the literature, yet the in-life provenance of the dead is debated (had they lived and died at the two aforementioned habitation sites or were they brought in for burial from valleys to the north and/or south?). Recent excavation at a major contemporary site in the relatively close-by lower Pisco Valley provides new data on the regional, cultural, temporal and sociopolitical context of the great funerary bundles and on lower Pisco's Paracas occupation. New problems for future research are raised.

Silverstein, Jay (Pennsylvania State): [66] (see *Sheehy, James J.*)

Simek, Jan F. (Tennessee)

[97] **Temporal Change in Krapina Stone Tool Assemblages (Croatia)**

Ongoing analyses of the lithic industries from Krapina (Croatia) are discussed. Stratigraphic analysis shows that at least two assemblages, but not more, can be defined. These coincide with strata containing hominid-bearing deposits. Both assemblages are Middle Paleolithic and show remarkable typological consistency. Raw material procurement and processing patterns are compared to show that assemblage composition and variation over time are situationally constrained by material acquisition.

Simmons, Alan H. (Nevada-Las Vegas)

[12] **Early Island Adaptations: The Neolithic of Cyprus**

One of the first places where the so-called "Neolithic Revolution" occurred was in the Near East. Despite its proximity to the Levantine mainland, however, Cyprus represents a late, distinct, Neolithic adaptation. This paper examines possible explanatory scenarios for this late development. I consider recent excavated evidence, including the implications of the first documented occupation of the island at Akrotiri Aetokremnos, as well as new investigations at Neolithic Kholtria Ortos in western Cyprus. Human subsistence patterns and associated ecological impacts upon an island environment are considered as key variables in understanding the early occupation of Cyprus.

Simmons, Scott (Colorado)

[88] **Maya Stone Tools from Tipu, Lamanai, and San Pedro: A Contact Period Perspective on Technology and Change**

Recent research on the formal stone tools found in Contact period archaeological contexts at several sites in Belize has shown that variation in forms and manufacturing technologies exists both within and between sites. It is likely that strong cultural traditions as opposed to purely functional concerns were responsible for both the manner in which some of these tools were manufactured and the styles of the distinct forms that were produced. Ethnohistorical information is used in conjunction with the results of lithic analysis to interpret patterns of Maya behavior at the time of Spanish contact in Belize.

Simon, Arleyn W. (Arizona State)

[126] **Social Networks and Alliances Among the Classic Period Salado of Central Arizona**

The prehistoric Salado were builders of platform mounds and compound-walled villages in the desert of central Arizona during the 13th to 15th centuries. Models of social organization proposed for the Salado are assessed in terms of site functions and relatedness of ceramic assemblages from burial and residential contexts. The associations among these settlements are examined through an integrated analysis that examines compositional characteristics and other related ceramic attributes. The results of these analyses indicate contrasting ceramic traditions, an amalgamation of production methods, and adoption of local materials over time. Using correlates to interpret these contrasts and similarities in ceramic traditions, intraregional and intrabasin scales of social networks and alliances are examined.

Simon, Brona G. (Massachusetts Historical Commission): [48] Discussant

Simon, Mary (Illinois-Urbana/Champaign) and *Kathryn Parker* (Great Lakes Ecosystems)

[59] **Detours and Divergences on the Pathway of Prehistoric Plant Exploitation**

Ongoing archaeological investigations in the American Bottom region of Illinois have produced a massive amount of archaeobotanical data. An initial synthesis by Sissel Johannessen, published in the 1984 volume *American Bottom Archaeology*, delineated broad regional patterns and evolutionary trends in prehistoric plant use. Subsequent botanical research supports Johannessen's regional framework and underscores a pattern of gradual economic transformation, punctuated by few but obvious and significant discontinuities. Incorporating new archaeobotanical data, we examine perceived changes and specific divergences in plant use relative to discontinuities in other aspects of the archaeological record from the region.

Simons, David C. (Bureau of Land Management): [67] (see *Copeland, James M.*)

Simons, Donald B. (Michigan Archaeological Society): [36] (see *Wright, Henry T.*)

Sinopoli, Carla M. (Michigan): [40] Discussant

Sisson, Edward B. (Mississippi)

[66] **Teohuacan Viejo**

Teohuacan was the largest, most powerful of the four city-states which controlled the Tehuacan Valley at the Spanish Conquest. The archaeological site of La Mesa has been identified as the cabecera of Teohuacan. Analyses of a new topographic map of the site and of the surface distribution of artifacts are used to outline the major social, political and economic organization of the site. The interpretations of these analyses may be used to plan future investigations at Teohuacan, the most important city-state of southeastern Puebla.

Skeates, Robin (University of Wales)

[76] **Copper Age Societies in the Marche Region, Central Italy**

Neolithic forms of production, settlement and social relationship were actively transformed during the Copper Age in Marche, perhaps initially in response to escalating socioeconomic and ecological pressures upon locally restricted subsistence resources in the lowlands. For example: traditional subsistence strategies became more diversified and specialized; previously peripheral geographical zones were gradually colonized; social contacts and conflicts with neighboring groups and regions were intensified; well-placed settlements emerged as successful centers of production, consumption and ceremonial gift-exchange; and material and mortuary symbolism were employed more overtly in attempts to define the identity and power of certain groups within society.

Skele, Mikels, and Rinita A. Dalan (both, Southern Illinois-Edwardsville)

[14] **Magnetic Susceptibility of Soils as an Aid to Interpretation of Prehistoric Features**

The boundaries of prehistoric feature fills are often difficult to distinguish when fill zones are composed of soils similar to surrounding subsoils. As it has long been recognized that archaeological sites and features exhibit enhanced magnetic susceptibilities over surrounding soils, we hypothesized that this property could be employed to distinguish between feature fills and bordering subsoils where the distinction is otherwise unclear. This hypothesis was tested at the Scott Joint-Use Project in Southern Illinois. The results, though not conclusive due to a small sample size, are sufficiently positive to encourage further research.

Skibo, James M. (Illinois State) and *Mark A. Neupert* (Laboratory of Traditional Technology)

[85] **Pottery Life History: An Ethnoarchaeological Perspective from the Philippines**

Ethnoarchaeology holds the keys to understanding the structure of artifact life histories and applying this approach in prehistory. Ethnoarchaeological data from the Philippines are used to discuss the manufacture and use of cooking pots at the scales of household production among the Kalinga and specialized production in Gubat, Sorsogon. Using ethnographic examples of behavioral chains and modified concepts of techno-, socio-, and ideo-function, we examine the structures of ceramic life histories. To develop archaeological applications, we also demonstrate how vessel context and use-alteration traces can be used to determine life histories of particular ceramic assemblages.

Slater, Bernadette C. (Northern Arizona): [136] (see *Hunter, Andrea A.*)

Slaughter, Mark C. (SWCA Environmental Consultants)

[126] **Mogollon Influence on the Hohokam of the Northeastern Tucson Basin**

Migrations are difficult to identify in the prehistoric record. Data obtained from Gibbon Springs Site (northeastern Tucson Basin), suggests that peoples from adjacent regions moved here and produced

corrugated ceramics (15% of the assemblage) as well as traditional Hohokam wares. Based on tree-ring and other data, the site was occupied from the mid-1200s and abandoned before 1300. During this time period, prehistoric groups from the northern Southwest were pushing southward and occupying new areas, such as the adjacent San Pedro River Valley. Mechanisms, such as intermarriage, that would account for non-Hohokam traits at the site will be further explored.

Sliva, R. Jane

[85] **A Life History Approach to the Analysis of Lithic Assemblages from Early Agricultural Communities in the Santa Cruz Drainage, Southern Arizona**

The Santa Cruz Bend and Stone Pite sites in the Santa Cruz drainage of southern Arizona represent Late Archaic and Early Ceramic sedentary agricultural communities. Such settings are traditionally expected to exhibit "expedient" lithic technology. While the assemblages conform to this expectation in general, when examined in terms of artifact pathways and remnant use-life, the data suggest that reworking and recycling were important components of the lithic technology at both sites, and that it is possible to differentiate between floor deposits of de facto refuse and feature and fill deposits of secondary refuse on the basis of artifact size.

Smith, Adam T. (Arizona)

[12] **Iron Age Architecture of Southern Transcaucasia: Landscape and State Formation**

The imposing architecture of Iron Age southern Transcaucasia (modern Armenia and Azerbaijan) marks the emergence of a new regional political landscape which was punctuated by the coalescence of both the Urartian and Classical Armenian states. By examining the first millennium B.C. architecture of southern Transcaucasia, this paper interprets Iron Age political development in reference to the production and reproduction of landscapes of power. In this light, southern Transcaucasia cannot be seen as a "core" or a "periphery" but rather must be described in terms of the simultaneous, historically situated interplay of local, regional, and supraregional political forces.

Smith, Bruce D. (Smithsonian): [80] Discussant; [93] Discussant; [109] Discussant

Smith, David G. (Toronto)

[71] **Cord-Marked Pottery and the Early Late Woodland in the Northeast**

The appearance of pottery with distinct corded decoration, including cord-wrapped stick motifs, is one of the primary characteristics used to signal the transition from Middle Woodland to Late Woodland in northeastern North America. This paper discusses the results of a detailed examination of corded pottery from the Transitional Woodland Princess Point Complex c. 1500-1000 B.P.) in southern Ontario. The antecedents of Princess Point pottery, internal pattern and variation, and relationships of Princess Point pottery styles with other Late Woodland pottery are investigated.

Smith, George S. (NPS, Southeast Archeological Center)

[80] **The Education Workshop**

As one of three workshops at the 1994 SAA sponsored working conference "Save the Past for the Future," the Education Workshop consisted of four work groups. The Network Work Group addressed ways to expand/develop a network for the exchange and dissemination of information and ideas relating to archaeology and education. The Resource Forum and Center addressed ways to expand/develop, evaluate, and display current archaeological education materials and the establishment of an Education Resource Center to conduct and coordinate research, program development, and training. The Formal Education Work Group examined ways to strengthen the quality and quantity of precollegiate archaeology education resources. The Professional Involvement Work Group discussed ways to increase education, training, and involvement of the professional archaeologists in a wide variety of archaeological education activities. Action Plans for each of these topics were prepared which formed the basis for recommendations made to the SAA on ways to strengthen their efforts to protect the past.

Smith, K. C. (Museum of Florida History)

[80] **Vital Resources: Making Archaeology Accessible to the Public**

The Education Resource Forum, a travelling exhibit of precollegiate archaeology education materials, was among the earliest tangible products of the SAA Public Education Committee. In the past five years, the exhibit has grown in collection size and format; indeed, the collection currently has "outgrown its bookshelves." Alternatives to deal with this situation and to make the Forum more portable and accessible were among the issues discussed in the Resource Forum/Resource Center working group. In addition, committee members also considered the feasibility of developing regional centers devoted to public programming and education. The results of both topics of conversation will be the focus of this symposium paper.

Smith, Michael E. (SUNY-Albany)

[125] **Archaeology and the Aztec Empire**

The archaeological analysis of ancient empires and their socioeconomic impact requires fine chronological control, data from both regional and household-level contexts, and adequate material-culture models of the relevant economic and political processes. These points are illustrated with archaeological data from the Mexican state of Morelos, a provincial area of the Aztec empire. Although Aztec imperialism had several identifiable direct effects in this area, it appears that its indirect effects (as expressed through its impact on local and regional polities and economies) were more significant for life and society in the provinces.

[26] Discussant

[90] (see Cascio, Lisa M.)

Smith, Shelley J. (Bureau of Land Management)

[80] **Precollegiate Programs for Archaeology Education**

SAA recognizes that conveying to children the value of understanding and preserving the past is an important component of a long-term effort to promote wise stewardship of archaeological resources. Archaeology education can also promote understanding of and respect for other cultures. Strategies to achieve these goals include collaboration with organizations, government agencies, schools, and other groups; making quality tested teaching materials and training available to teachers and youth group leaders; including archaeology in state curricula; researching the ability of education to change behavior; and using the most current educational methods in archaeology education programs.

Smyth, Michael P. (Kentucky)

[130] **Ceramics Production, Barrio Organization, and the Maya Economy: Economic Specialization at Sayil, Yucatan, Mexico**

Economic specialization and craft activities in the Prehispanic Maya Lowlands are often viewed as organized at the household scale, portraying a sharp contrast to the large-scale industries described for the Central Mexican Highlands. From this perspective, Maya centers were not economically nor energetically diversified and, therefore, were not true urban places. Data from site-scale surface survey at Sayil, Yucatan, however, contradict this view. This paper discusses evidence for a ceramic-making barrio, the related aspects of urban organization, and a Maya export economy in Northern Yucatan during the Terminal Classic period.

Snead, James E. (California-Los Angeles)

[126] **Communities, Competition, and the Cultural Landscape of the Eastern Anasazi, A.D. 1275-1500**

Recent field study of four late prehistoric communities in northern New Mexico has provided significant evidence concerning sociopolitical and economic organization among the eastern Anasazi following the late 13th century A.D. As documented through intensive surface survey, relationships between the aggregated community houses and field systems, shrines, trails, and field houses found in the core territories of these local groups appear to reflect both ecological and social parameters. The picture of the cultural landscape that emerges from these data is one in which bounded local communities were increasingly the focus of competition over productive resources, in particular agricultural land.

Snortland, J. Signe, and Kimball M. Banks (both, Bureau of Reclamation)

[110] **The Middle Missouri: Another Dam Headache**

Much of the Middle Missouri is under the management or control of federal agencies. How these resources are managed, though, varies between agencies. Consequently, there is no unified approach or agreement as to their correct management. Differences have become most apparent in the past several years because of the floods that have impacted the northern Plains and the increasing concern over accelerated erosion that has accompanied flood control activities. These differences and their impacts on the archaeological resources are discussed and several solutions are presented.

Snow, Dean (SUNY-Albany)

[71] **The Creation of Continuity: The Hunter's Home Phase in Iroquoian Archaeology**

Although often described as a process of discovery, archaeological units are created through a process involving the interaction of empirical data and assumptions about past cultural processes. The Hunter's Home phase was created thirty years ago to provide a bridge of continuity from the Point Peninsula tradition to the Owasco tradition. It is argued here that if discontinuity is assumed instead, one clearly replaces the other and that horticulture appeared suddenly, not gradually.

Snow, Susan R.

[136] **Constructive Imagination and Tropical Cosmology: The View from the North**

Using the theory of constructive imagination (e.g. Snow 1993) which presupposes the importance

of environmental factors in the conscious construction of a culture's cosmology, this paper will examine the evidence for cosmological images which reflect a knowledge and conscious reflection of tropical environmental features within North American cultures. Archaeological, ethnohistorical, and ethnographic evidence will be used to compare and contrast tropical images with those constructed from northern latitude environmental features. The configuration of these groups of images throughout different levels of the cultures will be examined in order to present tentative hypotheses about culture contact, migration, and diffusion.

Snyder, Lynn M. (Smithsonian)

[135] **Domestic Dogs as a Native American Food Resource: Archaeological Evidence From the Northern Plains**

During the river basin salvage excavations of the 1950-1960s in the Middle Missouri subarea, skeletal remains of domestic dog were recovered in frequencies often second only to bison. Butchering marks on recovered specimens indicate that these animals were regularly eaten. Detailed analysis of nearly 8,500 dog bones from sites spanning the entire sequence of village occupation, from Initial Middle Missouri (ca. 1000 A.D.) to the post-contact, Coalescent period (ca. 1860) document increasing intensity of use during the later periods, perhaps reflecting the progressive degradation of more traditional native food sources following European American contact and development of the fur trade system throughout the plains.

Sobolik, Kristin D. (Maine): [109] (see *Gremillion, Kristen J.*)

Soffer, Olga (Illinois): [16] (see *Adovasio, J. M.*)

Soffer, Olga (Illinois), *Pamela Vandiver* (Smithsonian), and *Bohuslav Klima* (Czech Academy of Sciences)

[16] **Paleolithic Ceramics and Clay Objects from Pavlov I**

We report on the technological and stylistic analyses of the clay and ceramics inventory from the Gravettian site of Pavlov I in the Czech Republic. This assemblage is compared to the one from the nearby site of Dolni Vestonice I to document variability between them due to differences in the composition of the loess used to fashion the objects and human intent. Differences in the spatial distribution of the inventories at the two sites suggest further variability in the context of ceramic production. Finally, fabric impressions on the fragments point to the use of woven artifacts at ca. 27,000 B.P.

Solimano, Paul, and *Leonard A. Forsman* (both, Larson Anthropological/Archaeological Services)

[43] **Late Holocene Cultural Systems in the Duwamish River Valley, Western Washington**
Recent archaeological and ethnographic investigations document small, special purpose fishing camps, contemporary fishing practices, and traditional cultural properties in the Allentown and Black River Junction areas in the Duwamish River Valley of Seattle, Washington. Combined with excavation data from the Duwamish No. 1 Site at the contemporary Duwamish River mouth and sites along the Black River to the east, the data sets demonstrate complex riverine and estuarine land use patterns over the past 1,500 years.

Solis Magaña, Carlos (Law Engineering & Environmental Services)

[115] **Trapiches de la Montaña**

Los estudios arqueológicos implantados en los Ríos Portugués y Cerrillos produjeron evidencia de una industria azucarera en las comunidades de Tibes y Maragüez. Esta industria aparenta haber tomado auge durante la última mitad del Siglo XIX. Evidencia arqueológica e histórica indica de que esta industria desapareció a principios del Siglo XX. En esta ponencia se examinan los contextos históricos y económicos del desarrollo y eventual desaparición de los pequeños productores de azúcar en la montaña. La evidencia arqueológica de los contextos arquitectónicos y domésticos se comparan con elementos análogos localizados en otras Islas de las Antillas.

Sorensen, Francisca Ramirez (Texas-Austin): [82] (see *Neely, James A.*)

Southon, John R. (Lawrence Livermore): [17] (see *Chippindale, Christopher*)

Spencer-Wood, Suzanne M. (Peabody Museum of Archaeology and Ethnology): [23] Discussant

Spielmann, Katherine (Arizona State)

[56] **Domestic or Ritual? The Contexts of Use of Rio Grande Glaze A Ceramics**

The widespread adoption of glaze-decorated ceramics throughout the northern Rio Grande after A.D. 1300 reflects a pan-Southwestern shift to red- and yellow-slipped vessels. Crown has postulated that these vessels are associated with the adoption of a regionwide cult, although the ceramics themselves

are used in domestic as well as ritual contexts. In order to identify the contexts in which Rio Grande glaze wares were used, this paper presents an analysis of the contexts from which early glaze vessels and sherds have been recovered, and of the artifacts found directly associated with them.

Spies, Arthur E., James Bradley (Peabody Museum, Phillips Academy), and *Deborah Wilson*
[36] **New England-Maritimes Region Early Paleoindian Occupation and Great Lakes Region Parallels**

Herein we review early (fluted-point) Paleoindian settlement pattern, lithic procurement, subsistence, and lithic technology data, which show remarkable similarities within the region, parallels between the New England-Maritimes region and Great Lakes, and contrasts with areas south of New England. The Great Lakes region sequence of chronological stylistic change in fluted points is mirrored, although perhaps not followed identically, in the New England-Maritimes region. The identification of a Parkhill Phase-like site south of Boston, Massachusetts, has raised questions of continued migration or transmission of detailed stone tool style information from the Great Lakes well after initial colonization of the region.

Stafford, C. Russell (Indiana State)

[103] **Resource Intensification Among Middle Holocene Archaic Hunter-Gatherers in the U.S. Midcontinent**

A shift to logistically organized settlement strategies by the middle Holocene among Archaic hunter-gatherers has often been linked to the presence of resource-rich aquatic habitats that emerged with modern river systems. This paper explores whether aquatic and semi-aquatic animals were a crucial element in the selection of this strategy, or if the shift reflects the more intensive use of terrestrial plant and animal resources. Middle to Late Archaic sites in a variety of environmental settings are used to examine the dietary ranking of resources. Reasons for selecting a logistically organized strategy to exploit these foods are also explored.

Stahl, Peter W. (SUNY-Binghamton), *James A. Zeidler* (Illinois-Urbana/Champaign), and *Marie J. Suttiff* (Escuela Politécnica del Litoral, Guayaquil)

[127] **Shamanistic Elements in a Terminal Valdivia Burial, Northern Manabi, Ecuador**

New scholars have contributed to our knowledge of South American shamanism as Gerardo Reichel-Dolmatoff. His insights into shamanistic philosophy and symbolism have provided an extraordinarily rich body of knowledge for anthropological and archaeological interpretation. In this context, we discuss a Terminal Valdivia burial (Piquigua Phase, ca. 1600 B.C.) from a multicomponent site located in the Middle Jama Valley of northern Manabi Province, Ecuador. After a brief description of the burial and its stratigraphic context, emphasis is placed on associated grave goods and their relationship to correlates of shamanistic religious practices known from other archaeological contexts within the Early Formative Valdivia cultural continuum.

Stallings, Kaylee (Texas-Austin): [13] (see *Lohse, Jon C.*)

Stanchly, Norbert (Toronto)

[88] **Identifying Social Complexity in Maya Archaeofaunas: Some Issues of Method and Theory**

Zooarchaeological analysis in the Maya lowlands has traditionally been concerned with reconstructing ancient Maya subsistence patterns. Increasingly, this research has addressed issues of social complexity, such as wealth and status differences within Maya society and how these might be manifested in the zooarchaeological record. This paper critically examines some issues of method and theory as they relate to the interpretation of social status from Maya archaeofaunas in light of recent debate on the subject of Mesoamerican elites.

Stanfill, Alan (Advisory Council on Historic Preservation)

[67] **Right-of-Way Archaeology: Putting the "Linear" Back into Linear Thinking**

The conduct of right-of-way archaeology in the federal government is vulnerable to misapplications of the "straight and narrow" decision making course imposed by the regulations, 36 CFR Part 800. These regulations provide Federal decision makers with a process comprised of sequential information gathering steps designed to promote informed decisions that are justifiable from legal as well as logical frameworks. However, agency efforts to minimize project costs by narrowly defining the scope of historic property considerations may result in illogical decisions that risk legal challenges, and project delays. This paper examines common problems of right-of-way archaeology, and appropriate solutions within the context of the regulations.

[25] Discussant

Stanford, Dennis (Smithsonian): [134] Discussant

Stanford, Dennis (Smithsonian), *Margaret Jodry* (American), and *Larry Banks* (Southern Methodist)

[9] **Early Paleoindian Diet Breadth as Seen from the Lewisville Site, Texas: Critter Buffet as an Alternative to Mammoth Barbeque**

The Lewisville site, Texas, became notorious during the late 1950s when radiocarbon assays of 37,000–40,000 B.P. were obtained from a "hearth-like" feature containing a Clovis point. The discovery of two additional features led to a reinvestigation of the site in 1979 and 1980. Chemical analyses determined that lignite was present in the features and accounts for the early dates. Analysis of feature and nonfeature fill suggests that a wide variety of vertebrate and invertebrate species were introduced to the site by Clovis people and indicates that the Clovis diet reflects a broadly based, eclectic economy which was well adapted to the diverse and changing environments during the Pleistocene/Holocene transition.

Stanish, Charles (Field Museum of Natural History)

[65] **The Late Formative/Tiwanaku Transition in the Western Titicaca Basin**

This paper assesses the Late Formative/Tiwanaku transition in the western Titicaca Basin using newly discovered settlement data. These data suggest that our traditional view of this critical time period must be revised. The Late Formative in the Juli-Desaguadero region was represented by at least two distinct, largely autonomous chiefly societies characterized by complex economic, political and ideological systems. This paper will define these societies and suggest new models for understanding the emergence of the Tiwanaku state in this Late Formative context.

[11] (see *Seddon, Matthew T.*)

[99] Discussant

Stark, Miriam (Smithsonian), *Jeffrey Clark* (Center for Desert Archaeology) and *Mark D. Elson* (Center for Desert Archaeology)

[62] **Social Boundaries and Technical Choices in Tonto Basin Prehistory**

Questions of social boundaries and cultural identity are perennial concerns of archaeologists in the American Northwest. Geographic patterning in material culture is commonly described by using terms such as "culture area," "province," or "alliance." This study explores processes that generated spatial discontinuities in the material culture patterning at sites in the prehistoric Tonto Basin. The concept of "technological style" is applied to the goods of everyday life (i.e., domestic architecture, utilitarian ceramics) to yield insights on social boundaries and regional systems. This emphasis on patterning in technical as well as decorative variation identifies previously undetected dimensions of social interaction.

Steadman, Lee (California-Berkeley)

[65] **Regional Diversity and Integration in the Formative Ceramics from Camata**

Recent excavations at Camata on the western side of Lake Titicaca have led to the development of an eight phase ceramic sequence spanning the Middle and Upper Formative periods. A series of AMS radiocarbon measurements dates this sequence to 1200 B.C. – A.D. 400. In the majority locally produced, the ceramics from the site nevertheless show strong stylistic and technological affinities with contemporary assemblages both to the north (Qaluyu, Pucara) and to the south (Chiripa), providing new information on the social and political relationships within the Basin during this period. This paper presents the ceramic sequence from Camata, and discusses the position of the site in a larger Titicaca Basin ceramic tradition.

[11] (see *Hastorf, Christine*)

Steffen, Anastasia (New Mexico): [42] (see *Penman, Shawn L.*)

Steffen, Anastasia, and *Ann Ramenofsky* (both, New Mexico)

[123] **Units as Instruments of Measure: An Introduction**

We approach unit construction as a methodological rather than a procedural pursuit. As a consequence, units must be ideational, explicit, and systematic with the expressed goal of measuring empirical variation. As with any scientific instrument, the performance of units must be evaluated within the realm of research for which they were created. We begin this symposium by building the context for subsequent applications by defining key concepts for the formation and evaluation of units. We emphasize the difference in meaning between reliability and validity, and we clarify the use of these concepts in archaeological practice.

Steffian, Amy F. (Michigan) and *Patrick Saltonstall* (Wisconsin-Madison)

[133] **Markers of Identity: Labrets and Social Evolution on Kodiak Island, Alaska**

Labrets were a common item of personal adornment among the complexly organized foraging societies of the Alaskan Gulf. Based on ethnographic analogies, archaeologists commonly interpret their occurrence in prehistoric contexts as evidence of ranking. This paper presents a stylistic

analysis of prehistoric labrets from the Kachemak and Koniag traditions of Kodiak Island, Alaska, and examines spatial patterning in the distribution of labret styles. We argue that labrets carried information on the wearer's social identity, signaled affiliation with a corporate group, not simply differences in individual status, and relayed different social messages at different levels of organizational complexity.

Stein, Gil (Northwestern): [58] Discussant

Stein, Julie K. (Washington)

[123] **Rethinking the Arbitrary and Natural Unit of Excavation: A Stratigraphic Alternative**
Archaeologists consider frequently the stylistic or functional units into which they place artifacts, but they rarely consider the units constructed during the extraction of those artifacts from the ground. The use of either natural or arbitrary levels is noted, layers described, and counts of artifacts-per-layer noted. An alternative approach is to construct units described by their lithological, biological, and/or artifactual attributes to create the sequence. Most importantly, no single sequence is deemed most appropriate or correct, rather many different groupings are constructed using a wide variety of attributes. This stratigraphic approach allows associations to be shifted and resulting boundaries noted. The deposits from which artifacts come, and the associations or context we choose for those artifacts, affect our interpretations.

Steinberg, John M. (California-Los Angeles)

[55] **The Plowzone: Disturbed Household Archaeology of Chiefdoms in Northwest Denmark**
The Thy Archaeological Project created a plowzone methodology that discloses the nature of lithic production at a site, regardless of preserved subsurface features. We have devoted a large portion of our resources to "excavating" mass amounts of plowzone from discrete locations at 18 sites from the Early Neolithic through to the Early Bronze Age. After screening over 150,000 liters of soil and recovering over 10,000 artifacts patterns of inter and intra site variability are evident. The distribution, density, and characteristics of flakes and tools reveal a picture of the organization of lithic technology and the value of stone tools at chiefly and commoner households.

Stemper, David M. (Georgetown) and *Hector Salgado López* (INCIUA, Colombia)

[127] **Figurines, Meanings, and Politics from 700 B.C. to A.D. 400 Colombian Pacific Coast**
We examine the usefulness of theories—such as those in Reichel-Dolmatoff's essay "Anthropomorphic Figurines from Colombia, Their Magic and Art"—to interpret 100–200 figurines from Tumaco-La Tolita to Buenaventura. Our evidence comes from an analysis of contexts of use and discard, dating (2–3 periods between 600–700 B.C. and A.D. 300–400), the elaboration of figurine ornaments and anatomical features and the role of molds to standardize production. We suggest that the similarity of figurines from Tumaco-La Tolita region to Buenaventura reflects this region's political and economic control along a 350-km coastline.

Stevens, Doug (San Juan National Forest)

[132] **An Experience Based Approach to Heritage Site Interpretation**

Steady increases in the number of visitors to heritage sites has precipitated the necessity to balance visitor needs with resource preservation. This paper outlines an approach that combines theories developed for recreation management with sound cultural resource preservation practices to ensure that a range of visitor experience opportunities at heritage sites are provided for on a regional scale. It demonstrates that a proactive management strategy to heritage site interpretation is essential and that cooperation among different federal lands agencies is necessary to address the needs of a diverse public audience.

Stevens, Jeanette E. (Southern Illinois-Carbondale)

[18] **The Political Geography of Mississippian Mound Centers at the Mississippi-Ohio River Confluence**

Several mound centers occurred in the Mississippi-Ohio River confluence region during the Mississippian period. However, no single center dominated the area or occurred the actual confluence point. Instead, centers were fairly evenly distributed across the landscape. Each appears to have been a small polity oriented toward its immediate physiographic setting, as well as to the main river channels. The Dogtooth Bend site in southwestern Illinois is an example of one such center. The relationships of the mound centers to the regional landscape and to each other suggest fairly balanced competition for access to the strategic confluence location.

Stevonaitis, Vincas P. (North Carolina-Chapel Hill): [14] (see *Davis, R. P. Stephen*); [71] (see *Prezzano, Susan C.*)

Sterling, Sarah L. (Washington)
[22] **Recognizing Functional Differentiation at the Predynastic/Old Kingdom Transition in Egypt**

During the Predynastic/Old Kingdom transition, artifacts show increased similarity across Egypt. The replacement of heterogeneous Predynastic assemblages with standardized Old Kingdom assemblages could represent a change in the scale of selection from several self-sufficient, interacting groups to a functionally interdependent society in which individuals were no longer able to replicate the range of subsistence activities necessary for survival. Trade in subsistence goods are indicative of functional differentiation within and between societies. Published data on the distribution of subsistence items provide information on whether this transition represents a change in scale.

Stettler, Heather (Chicago)
[119] **Macrobotanical Remains from the Site of El Juyo, Santander, Spain**

This paper discusses the recovery, identification, and analysis of paleobotanical remains from the 1993 and 1994 field seasons at the Early Magdalenian site of El Juyo (Santander) Spain. The analysis uses statistical tests of significance to examine the spatial distribution of the macrobotanical material. It also explores the relationship of this distribution to the distribution of stone and bone tools within the site and to the features of the site—including structures and hearths. Paleoenvironmental implications are also noted.

Stevens, Michelle (Arizona)
[12] **Chalcolithic–Early Bronze Age Land Use in the Southeastern Wadi Araba, Jordan**

The distribution of several newly and previously recorded Chalcolithic–Early Bronze sites in the southeastern Wadi Araba, Jordan suggests that human occupation was concentrated near the Gulf of Aqaba. However, several more northern sites in the Wadi Rakiya indicate the presence of a small community with different land use patterns. The chipped stone assemblage from both of these areas provides evidence for determining the nature of contact between communities on the Jordanian Plateau and in the Wadi Araba.

Stevenson, Chris (Diffusion Lab), *Peter J. Sheppard* (University of Auckland), *Douglas G. Sutton*, and *W. Ambrose* (University of Auckland)

[61] **Advances in the Hydration Dating of New Zealand Obsidian**
Newly developed methods and calibrations for determining the age of flaked obsidian surfaces have been described and applied to New Zealand archaeological obsidians. Hydration bands were measured under high magnification (1000x) using a MOCHA computer imaging system to an accuracy of .2 microns. Hydration rates were then calculated on the basis of obsidian water content as estimated from artifact density while effective hydration temperatures were established from published temperatures derived from thermal cells. Hydration dates have been compared with radiocarbon dates from five archaeological sites in the North Island of New Zealand. The obsidian age determinations correlated well with the radiocarbon dates from the same context except for those recovered from sand dune sites. These results validate the ability of obsidian hydration dating procedures to provide accurate calendar year age estimates.

Stevenson, Christopher M. (Archaeological Services Consultants): [37] (see *Awe, Jaime J.*)

Stevenson, K. (National Park Service): [122] Discussant

Stewart, R. Michael (Temple)
[71] **Clemson Island and Early Agriculture in the Northeast**

Clemson Island (A.D. 800–1300), the first farming culture in the Susquehanna Valley of Pennsylvania, is summarized and its role in the cultural evolution of the region discussed. The culture appears at the same time as other farming cultures throughout the region especially in the Appalachian area extending from south central New York to the Carolinas. The use of maize and farming is not viewed simply as the outcome of local peoples dealing with the problems of population growth and stress on traditionally exploited resources. Alternative scenarios are presented which involve the social costs of subsistence practices and the effects of migrations.

Stiles, Cynthia (USDA Forest Service)
[132] **Partners 'R Us: Doubling the Fun Through Interagency Partnerships**

The State Region 2 Archaeology Center, located in northeastern Wisconsin, was established through a partnership between the State Historical Society of Wisconsin and the Nicolet National Forest. Responsibilities include: 1) identifying archaeological sites on private and state lands, and 2) providing assistance/information/public education programs to local governments, Indian tribes, private and public agencies and the general public. The center also produces long-term plans, National Register nominations and studies of historic and prehistoric cultures of the region. An

analysis of the benefits that this partnership provides to all parties, in a time of limited funds, is presented.

Stiner, Mary C. (Arizona): [38] Participant

Stiver, Laura R. (Vanderbilt)
[73] **Ceremonial and Economic Border Activities in Postclassic Mixtec Society**

Early pictorial manuscripts, maps and documents produced by the Mixtecs of Oaxaca, Mexico, provide information on prehispanic communities and their boundaries, and offer an opportunity to integrate documentary data with ethnographic and archaeological findings. We present ethnohistoric, ethnographic and archaeological evidence indicating the ideological and economic significance of activities carried out not within communities but on their borders. Activities associated with named border sites include ceremonies and ball games, as well as resource procurement and marketing. It is suggested that these boundary phenomena functioned as important mediating institutions among conflicting Postclassic Mixtec polities.

Stoltman, James B. (Wisconsin-Madison)
[36] **Paleoindian Adaptive Strategies in Wisconsin**

The Paleoindian occupation of Wisconsin can be postulated to have spanned the interval 11,200 B.P. to 10,000 B.P. This paper reviews the stylistic and distributional evidence concerning the archaeological record of Paleoindian peoples of the region, along with the paleoecological record for this period, to infer that adaptive strategies must have involved high mobility along with highly variable (through time and space) resource exploitation, with the primary emphasis being upon hunted game.

Stomper, Jeffrey (Yale), *Barbara Fash* (Northern Illinois), and *Elizabeth Pope* (Texas-Austin)
[34] **The Popol Na: Politics and Sacred Space at Copán, Honduras**

Recent excavations at Copán, Honduras, have uncovered the site's "Community House," the *Popol Na* and provide us with the window which reveals the relationship between architecture and the Maya cosmos. The *Popol Na* was constructed just after the political catastrophe of the beheading of Copán's ruler by a rival city. The Copán elite took advantage of the ensuing political upheaval to expand their power by placing the *Popol Na* in the most sacred precinct of Copán. This paper examines the use of architecture and iconography as a system of political propaganda that reflects the changing political environment of Late Classic Copán.

Stone, Andrea (Wisconsin-Milwaukee)
[39] **Socio-Spatial Paradigms and the Production of Maya Rock Art**

An important cultural paradigm underlying the production of Maya rock art is the perception of a controlled community space versus an uncontrolled, supernaturally endowed wilderness space. This spatial cleavage has generated a tradition of pilgrimage to sacred sites in the wilderness, where Maya rock art, primarily cave art, is found. Human-topographic interaction in this case is patterned on movement to and from a center (the community). The paper compares this socio-spatial model with ones lacking a fixed center, as in nomadic societies, and considers their influence on the form and function of rock art.

Stone, Connie L. (Bureau of Land Management)
[132] **Linking Cultural Resource Management to Ecosystem Management: A Case from Arizona**

Cultural resources are too often forgotten in the new emphasis on ecosystem management by federal land management agencies. Yet, ecosystem management offers new opportunities for proactive management of cultural resources during a time when such opportunities are becoming more limited as federal agencies downsize and restructure. Perry Mesa, a significant archaeological district in central Arizona, offers a case example showing how the Bureau of Land Management and the U.S. Forest Service have cooperated to ensure that cultural resource management is an integral component of ecosystem management of the Agua Fria high desert grassland.

Storey, Glenn R. (Iowa)
[10] **Romans, Religion, and Urban Planning: Implications for the Archaeological Interpretation of Urban Configurations**

The concept of the city in many cultures appears profoundly religious, so archaeologists often interpret the alignments of structures according to conjectured religious or cosmological significance. Although Roman city planning originated in religious context, ethnographic analysis of its execution strikes a cautionary note. The neat connection between Roman cosmogony and the shape of Roman cities is debatable because religious scruples could give way to pragmatic environmental considerations. Thus the importance of religion in city planning in other cultures, such as China and

Mesoamerica, may have been similarly compromised, implying that the role of religion in urbanization may be overemphasized.

Stothers, David M., and Timothy J. Abel (both, Toledo)

[71] **The Inception and Consequences of Maize Agriculture: A Perspective from the Western Lake Erie Basin**

The focus of this paper is upon the inception of maize agriculture among two indigenous late prehistoric cultural manifestations which inhabited the western Lake Erie region; and the consequences of increase maize dependence as inferred from cultural interaction among these and other manifestations in the Midwest. It is herein suggested that increased maize dependency initiated a demographic crisis in the western Lake Erie region, precipitating resource competition and endemic warfare between these two cultural groups. Various data sets are drawn upon to infer temporally distinct changes in the economic, social, and political landscape of the western Lake Erie region.

Strand, Jennifer G. (Arizona)

[42] **Ritual Behavior and the Faunal Remains From a "Great Kiva," Homol'ovi II Pueblo.**

In 1993 a "Great Kiva" was excavated at the 14th-century aggregated pueblo site of Homol'ovi II with the intent of examining ritual behavior and its import in social relations. Ritual practices are identified in the recovered faunal assemblage by the presence of exotic or rarely recovered species, the elements recovered, the ratios of identified species, and the context of the recovered specimens. This assemblage is compared with faunal assemblages from ceremonial and nonceremonial structures at Homol'ovi II and related sites.

Straus, Lawrence G. (New Mexico)

[60] **Coming Out from the Cold: Western Europe in Dryas I**

As the Last Glacial Maximum gradually loosed its grip on Western Europe, there occurred a variety of cultural changes (adaptive responses?) in the refugia to which humans had been more or less confined between 21-18 kya. These included: 1) continuation and regional diversification of the Solutrean foliate and tanged point weapon technology, but with a trend toward replacement by backed bladelet armatures, 2) abrupt development of Badegoulian or early Magdalenian technologies, 3) northward reexpansion of the human range and infilling of high altitude regions of SW Europe.

Strazicich, Nicola H. (SUNY-Buffalo)

[21] **Prehispanic Pottery Production at La Quemada, Zacatecas**

Intensification of pottery production at the Epiclassic site of La Quemada, Zacatecas, is addressed by chemically characterizing 170 sherds and 31 clay samples from La Quemada and three contemporaneous sites to identify resource selection, production areas, and intraregional exchange. All of the sites considered were self-sufficient in pottery production. However, two elaborately decorated wares, Pseudocloisone and Negative polychrome, were manufactured at La Quemada and pottery analyzed from the ceremonial central precinct of the site is compositionally distinct. The production of labor intensive vessels coupled with evidence for selectivity in resource procurement suggests that incipient craft specialization occurred at La Quemada.

Stright, Melanie J. (Department of Interior): [87] Discussant

Stumpf, Gary (Bureau of Land Management)

[132] **Using Ethnoecology Studies to Improve Ecosystem Management**

"Ecosystem management" is a term used frequently in land managing agencies today. It signals a shift from managing resources separately on the landscape, to managing resources holistically as interconnected parts of environmental systems. Ethnoecology studies, which focus on past human uses of an area, can provide the kind of information and long-term perspective that can help land managers understand how the ecosystems they manage have changed through time, and how present-day land use proposals are likely to affect the health of those ecosystems.

Styles, Bonnie W. (Illinois State Museum)

[103] **Changing Subsistence Strategies in the Midwestern United States**

Faunal data from Midwestern archaeological sites document geographic and temporal variation in subsistence strategies. Early to mid-Holocene environmental changes exaggerated differences between resource catchments within and outside large river valleys. Mid-Holocene populations made greater use of white-tailed deer and aquatic resources. In large river valleys, the trend of increasing reliance on aquatic resources continued in the late Holocene, but the representation of white-tailed deer and other terrestrial mammals declined. These broad patterns correspond to changes in environment, plant use, and settlement and mobility strategies.

Sugiyama, Saburo (Dumbarton Oaks)

[82] **Symbolism of Human Sacrifices at the Feathered Serpent Pyramid, Teotihuacan**

The paper discusses specific ritual meanings of the sacrificial burial complex discovered at the Feathered Serpent Pyramid. It consisted of about 200 people sacrificed with exceptionally rich offerings made with obsidian, greenstone, shell, and other materials. Reconstruction of the victims' bodies and their associations with offerings are demonstrated through the MapInfo computer program in order that ideological contents are systematically examined and visualized over excavation contexts. Particularly, cosmology, temporal and spatial dimensions, ritual warfare, and gender involved in ritual sacrifices are themes I will focus on for my analysis and interpretation. The paper finally discusses the rulership involved.

Suhler, Charles (Southern Methodist): [114] (see *Freidel, David A.*)

Sullivan, Lauren A. (Texas-Austin)

[13] **The Internal Dynamics of a Small Maya Site: The Excavation of Las Abejas**

This paper presents the results of three years of research at Las Abejas, a small Maya site located in northwestern Belize. Investigations at the site have focused on sampling the major architecture in order to determine structure function, dates of habitation, and to ascertain the construction history of the site. A settlement survey of the area surrounding Las Abejas and the shallow trench excavation of eight structures to the Late Classic occupation have provided a basis from which the internal dynamics of the site can be examined and social, political, and economic relationships of the region discussed.

Sullivan, Lynne P. (New York State Museum): [104] (see *Neusius, Sarah W.*)

Sullivan, Tim: [66] (see *Sheehy, James J.*)

Sundstrom, Linea

[17] **Buffalo Women: Changing Contexts of a Siouan Rock Art Tradition**

Traditional Lakota, Mandan, and Hidatsa religious beliefs provide a context for interpreting the meaning and function of prehistoric Siouan rock art. The rock art depicts bison tracks, human vulvas, handprints, suns, turtles, and thunderbirds. This widespread style of rock art suggests the existence of a long-standing religious tradition in which women and bison are conceptually related as givers and sustainers of human life. This basic concept was retained for over 1000 years on the northern plains and was shared by horticulturalists, bison hunters, and horse pastoralists.

Sutherland, Donald R (Bureau of Indian Affairs)

[106] **What Archeologists Who Wish to Practice on Indian Lands Need to Know About the Trust Relationship Between Indian Tribes and the United States**

Because of the nature of its relationship with Indian tribes, the Federal Government manages Indian lands quite differently from the way in which it manages public lands. In this presentation, key principles guiding this relationship, such as Federal recognition of tribes, trust responsibility, tribal sovereignty, the government to government doctrine and self determination, are explained, as is the administrative role of the Bureau of Indian Affairs. The goal is to help archaeologists better understand how these principles condition the manner in which the Government treats archaeological resources on Indian lands.

Sulliff, Marie J. (Escuela Politécnica del Litoral, Guayaquil): [127] (see *Stahl, Peter W.*)

Sutton, Douglas G.: [61] (see *Stevenson, Chris*)

Sweely, Tracy (Colorado)

[23] **Objects, Space, People, and Power at Ceren, El Salvador**

Assuming a relatively rigid sexual division of labor within Classic period Mesoamerican societies, the use of space at Ceren, El Salvador is examined utilizing a gendered perspective. Statistical analysis of artifact distributions provides exploration and evaluation of the extent to which single or multigendered spaces can be found at Ceren. An analysis of the presence and absence of specific gender associated artifact types within pooled functionally equivalent structures and spaces are used to assess possible power relations associated with those spaces and the products of the labor performed within them.

Swidler, Nina, and Janet Cohen (both, Navajo Nation Historic Preservation Department)

[54] **Whose Sites Are They Anyway: Interested Party Consultation on the Navajo Nation**

This paper presents the processes for consultation with other tribes on road improvement projects throughout the Navajo Nation. The Navajo Nation Historic Preservation Department, Roads Planning

Program, has taken a leading role in integration of other tribes' concerns into the planning process for management of archaeological and traditional cultural resources. This consultation fulfills obligations set forth in Section 106 of the National Historic Preservation Act and a recently ratified Programmatic Agreement. Along with consultation procedures, some of the difficulties and controversies inherent in this type of consultation are addressed.

Swihart, Sharon (Massachusetts)

[34] **Long Distance Relationships and Elite Legitimation: A Case Study from Late Preclassic Northwestern Honduras.**

Rio Pelo, Yoro, Honduras is a late Preclassic site situated at the base of the Mico Quemado Mountains, overlooking the lower Ulua River Valley from the east. When considered in terms of the site's and valley's proxemics, results from a recent, brief salvage excavation at a putative domestic unit are important for reassessing Rio Pelo's development and function, and its role in the valley and beyond. These considerations lead in turn to interesting hypotheses regarding the nature of elite legitimation and the degree to which it was dependent upon long distance economic and, perhaps, ideological relationships.

Syrett, Matthew D. (California-Santa Barbara)

[47] **The Use of Geographic Information Systems to Explore Models of Social Change During the Pleistocene/Holocene Transition in Europe**

Archaeologists have modeled the social changes of the Pleistocene/Holocene transition in Europe as resulting from environmental or demographic forces. However, researchers have been unable to explore these forces at a continental scale using traditional techniques, which has prevented testing of these models of causation. With the technology of a geographic information system, I have tested the above models by recreating past demography and environment in Europe and comparing these dimensions to one of the cultural developments of the transition: microlithic technology. I will show through this effort that previous models of causation are inadequate to explain why microliths developed.

Tacon, Paul S. C. (Australian Museum-Sydney): [17] (see *Chippindale, Christopher*)

Tankersley, Kenneth B. (SUNY)

[116] **Temporal and Spatial Paleoindian Subsistence Patterns in Eastern North America**

New data from archaeological sites in eastern North America demonstrate that Paleoindian subsistence strategies varied through time and across space. Chronoclines and geoclines are evident in the technological and stylistic diversity of the tool kits, the variety of raw materials procured, and the environmental settings exploited. The subsistence patterns presented here are inconsistent with what we would expect to find if Paleoindians were simply big game hunters or generalized foragers.

Tapia-Recillas, Horacio (Universidad Autónoma Metropolitana-Iztapalapa): [82] (see *McClung de Tapia, Emily*)

Tarka, Stanley M.: [64] (see *Hurst, W. Jeff*)

Tarrago, Myriam (Facultad de Filosofía y Letras)

[63] **El Desarrollo de la Arqueología en los Andes Meridionales**

Se propone efectuar una reflexión crítica acerca del proceso de desarrollo de la arqueología en los Andes del Sur durante los últimos veinticinco años, desde la perspectiva y la práctica de una arqueología que investiga en el área del Noroeste Argentino y que ejerce la doctrina en una universidad Argentina. Se analizan las condiciones histórico-sociales que han incidido en su desenvolvimiento en forma pendular, tanto a través de las políticas académicas como de los programas de financiación interna. Se discuten, luego, los grados de autonomía en la generación de conocimiento por parte de los investigadores nativos frente a las influencias teóricas externas, en especial, del mundo anglosajón.

Teltser, Patrice (Arizona)

[123] **Settlement as Unit of Measurement: Issues of Validity and Reliability**

The concept of settlement, a methodological device to examine variation in the archaeological record in terms of social organization, was never formally defined in terms of a specific explanatory framework. Consequently, the validity of this unit must be examined post hoc. This reveals inconsistencies, due to its use as a unit of observation, measurement, analysis, and synthesis. For some explanatory frameworks the unit is valid. Since the concept refers to systemic, rather than archaeological context, it constitutes an unreliable unit of measurement. Given the reliability problem, we should consider frameworks that require different measurement units for understanding the evolution of human social organizations.

Thacker, Paul (Southern Methodist)

[16] **Representative Settlement Studies of the Upper Paleolithic: The Importance of Disturbed and Small Sites**

This paper demonstrates the necessary inclusion of small sites, surface scatters, and plowzone levels in any regional approach to the Late Pleistocene archaeological record. Using data from the Magdalenian of central Portugal, correlations between modern land use, Pleistocene landforms, and site types are detailed, while the systematic bias created by analyzing only in situ deposits is illustrated. Including small, surface, and disturbed sites facilitates more robust interassemblage comparison, technological organization modeling, and land use studies.

[28] (see *Pereira, Carlos*)

Thomas, D. H.: [122] Participant

Thompson, Robert G. (Minnesota)

[131] **A Functional Study of Brainerdware Pottery Through Phytoliths Recovered from Food Residues**

The Roosevelt Lake Narrows site, a multicomponent site in Cass County Minnesota, yielded abundant Initial Woodland pottery. This pottery was mostly Brainerdware, and represented the accumulation of multiple occupations at the site. Phytoliths recovered from these residues, combined with other data recovered at the site, provide a picture of plant use during these multiple occupations, including both plants used and the necessary processing activities implied.

[45] (see *Kluth, David*)

[120] (see *Justin, Michael A.*)

Thoms, Alston V.

[9] **Late Paleoindian Phantoms and Early Archaic Land-Use Strategies: A Savannah Perspective from the Southeastern Periphery of the Southern Plains**

The Richard Beene site is located in a riverine setting within south-central Texas' savannah region. Angostura projectile points and adzes dominate the tool assemblage from a deeply buried, 9000 year old component. The faunal record attests to the primary importance of deer-sized animals and the use of riverine fauna, including small land animals, river mussels, and fish. Abundant fire-cracked rock and numerous heavy-duty tools hint of the importance of plants. The inferred micro-environmentally oriented focus on hunting-gathering-fishing is more consistent with generic, Archaic-style land use than with a conventional Paleoindian, hunting-oriented system.

Thurston, Tina L.

[128] **The Power of Place in Iron Age Denmark: A Physical and Cultural Geography of State Formation**

Spatial relationships in cultural landscapes are empirically observable, but also encode perceptions and beliefs, permitting the study of linkages between the social, political, and ideological. Modeling change during state formation in Iron Age Denmark requires multiple research strategies. Changes in organization are reflected in transformation of the built landscape: inter- and intrasite locational change is revealed through the chemical characterization of anthropogenic soils. To interpret these physical changes on a theoretical level, prehistoric cultural geography and landscape analyses monitor organizational change in political, socioeconomic, and religious landscapes, revealing state unification as well as conflict between central and local authority.

Todd, Lawrence C. (Colorado State): [9] (see *Hofman, Jack*); [116] (see *Hill, Matthew Glenn*)

Todea, Nathaniel (Navajo Nation Archaeology Department): [67] (see *Reed, Paul F.*)

Tomka, Steve A. (Prewitt and Associates)

[32] **Systemic Constraints on Tool Design, Manufacture, and Selection Strategies in a Transhumant Agro-Pastoral Context**

This study provides an ethnoarchaeological example of the manner in which reliability and maintainability are manipulated in the manufacture and selection of artifacts used under different time-stress conditions. Tools used within contexts of substantial time-stress have high manufacture-technique and raw material reliability but low repair potential. Tools used within relaxed time-stress contexts have lower manufacture-technique and raw material reliability but high repair potential. These generalizations, and tool categories that represent exceptions to them, exemplify the role of these design components in the organization of technology.

Tompkins, Charles (Arizona)

[70] **Classifying Clovis Points: A Study in Metric Variability**

Fluted projectile points mark the first peoples to have (unequivocally) occupied the Americas.

However the variability in this hemispherewide tradition has yet to be comprehensively surveyed and the lack of systematic classification makes problematic the interpretation of many finds. One means of addressing these problems is demonstrated: morphological comparisons based on the eigenshape analysis of video-based digitized outlines. The method follows cutting edge work in evolutionary biology. This paper's sample of 100 projectile points is drawn from sites across the continental U.S. Several different statistical analyses clearly show regional groupings, one of which has not previously been documented.

Toom, Dennis L. (North Dakota)

[110] **Thirty Years After: The Post-Damming Condition and Research Potential of Middle Missouri Village Sites**

It has been 30 years since the Missouri River dams in the Dakotas were built by the U.S. Army Corps of Engineers. The construction and operation of these dams and their reservoirs has impacted hundreds of important archaeological sites, particularly earthlodge village sites, in that region of the Plains known as the Middle Missouri subarea. This paper examines the post-damming condition of Middle Missouri village sites. While many sites were essentially destroyed, others remain more or less intact and preserve significant research potential, but many of the remaining sites continue to be degraded by erosion.

Toplyn, Michael (Harvard): [68] (see *Landon, David B.*)

Toshihara, Kayoko (Illinois-Urbana/Champaign)

[99] **Huaracane Pottery in the Moquegua Valley—Toward Defining a Formative Culture in the South Central Andes**

The 1994 survey in the Middle Moquegua Valley yielded new data about the little known Formative culture in this region, known as Huaracane. In order to explicate the development of Huaracane culture and its interaction with other cultures, a fine-grained chronology and reliable evidence about the association of material cultural elements are necessary, and an intensive study of Huaracane pottery is indispensable. Although Huaracane pottery was previously classified into three types, more variations within these three types, and new types have been identified, and await future analyses.

Toumazou, Michael K. (Davidson): [31] (see *Yerkes, Richard W.*)

Tourtellot, Gair (Boston): [52] (see *Hammond, Norman*)

Tourtellot, Gair (Boston) and *John Rose* (Pittsburgh)

[52] **More Hills, More Glory: Sampling Settlement at La Milpa, Belize**

Randomly scattered survey blocks ameliorate centric bias and efficiently recover a sample from 18 sq. km. of intermediate settlement space on rugged terrain. Test excavations indicate a dense Late/Terminal Classic occupation, whose socioeconomic characteristics will be presented. New types and networks of enigmatic stony mounds absent from the site center may be products of vast programs of rural lithic acquisition and agrotechnical landscape development.

Towner, Ronald H. (Laboratory of Tree-Ring Research) and *Byron Johnson* (WCRM)

[126] **Estimating Dinétah Navajo Population: Implications of the San Rafael Survey**

San Rafael Canyon in the Navajo homeland of Dinétah in northwestern New Mexico was the location of an intensive 18th century Navajo occupation. Two large *publitos* located in the canyon were the focal points of Navajo settlement at different times. An intensive survey of a portion of the canyon revealed a variety of site types, including several previously unknown types. A settlement model derived from historically documented Navajo settlements is used to interpret the archaeological and dendrochronological data from the area. Results suggest we must refine our views of 18th century Navajo settlement to include aspects of kinship and mobility.

Tringham, Ruth (California-Berkeley)

[117] **Transformations to Agriculture: Models, Data, and Interpretations from Southeast Europe**

The transition to agriculture in southeast Europe has been a crucial topic of research at an international scale for thirty years, not least because the Balkan peninsula has been regarded as a "bridge" for the diffusion of plants, animals, techniques, and people between Europe and the Near East. This paper explores the current research questions, the changing strategies of data collection and changing interpretations of the data on the transformation to agriculture in southeast Europe in the light of recent events and research in Europe as a whole.

Troccoli, Ruth (Florida)

[23] **Women Chiefs in the Southeast and Caribbean: Women of Power or Invisible Women?**

Ethnohistoric literature on Southeastern and Caribbean Native American societies reveals that women chiefs have been present since the time of Columbus and wield considerable power at every level of political complexity from hamlets to paramount chiefdoms. However, few studies of chiefdoms have addressed how women achieve power or examined whether women's chiefly power and authority differ from men's. Considered anomalies, women chiefs are ignored. The cultural blinders responsible for this lack of research are rooted in the western mindset of "powerless women": women chiefs are not considered legitimate participants in indigenous political systems.

Trubitt, Mary Beth D. (Northwestern)

[20] **Marine Shell Ornament Production at Cahokia**

Marine shell ornaments, mostly beads, are found in quantities at Cahokia and occasionally at smaller Mississippian sites in the American Bottom. This paper explores shell ornament production at Cahokia, focusing on the tools and techniques used to manufacture shell beads. Description of the shell-working tool kit is necessary for identifying possible beadmaking activity areas and production debris, and evaluating the social and economic contexts of production.

Truncer, James (Washington)

[22] **Provenance as a Measure of Transport Cost: A Study of Steatite Vessel Manufacture Using Evolutionary Theory**

While steatite vessel manufacture appears to have been widespread in eastern North America between 1800 and 800 B.C., previous studies have not addressed why steatite vessel manufacture has this spatial and temporal distribution. Chemical and mineralogical variability of steatite sources and vessels establishes artifact provenance (based on compositional similarity) and thereby distance between artifact locations and sources. Transport cost is incorporated into a larger study of steatite vessel manufacture from an evolutionary perspective.

Turkon, Paula (SUNY-Buffalo)

[21] **Environmental Unpredictability and Subsistence at La Quemada, Zacatecas, Mexico**

Following Armillas's (1964) hypothesis that climatic changes promoted initial settlement and subsequent abandonment of northwestern Mexico, this paper examines the relationship of environmental unpredictability and high dependency on maize as a driving force in the occupational history of northwest Mexico. The site of La Quemada, Zacatecas, Mexico is used as a case study of this general process. Modern climatic data are used to demonstrate environmental unpredictability, and paleoethnobotanical data establish the connection between risk of subsistence failure and the decline of La Quemada. It is suggested that a subsistence system imported from elsewhere in Mesoamerica was ill-suited to local environmental conditions.

Turner, Margaret H. (Massachusetts College of Art)

[20] **Shell Ornament Production at Teotihuacan, Mexico**

Exotic shell, shell ornaments and waste from ornament production were recovered through surface collection and test excavation at Teotihuacan, Mexico by personnel of the Teotihuacan Mapping Project. Recent analysis of this material addresses questions about the scale of production and the location and specialization of specific workshop types within the city. The evidence suggests that certain shell species were used by craftsmen who also were lapidaries, while other species, primarily *Spondylus*, may have been reserved for use by craftsmen who worked exclusively in shell.

Tykot, Robert H. (Harvard)

[76] **Changing Patterns of Settlement, Subsistence, and Social Interaction in Neolithic Sardinia**

Recent research on island biogeography, settlement and subsistence strategies, and lithic resource exploitation indicates that neolithic lifeways in Sardinia were neither simple nor homogeneous. The apparent two-phase adoption of the "neolithic package" was paralleled by shifts in settlement patterns and exchange networks. Regionally diverse socio-religious architectural manifestations including platform-altars and elaborately decorated hypogean tombs also appear in the Late Neolithic, while grave goods suggest the beginnings of social differentiation. It is argued that changes in settlement and subsistence led to differential access to territorial resources, resulting in new mechanisms of exchange, and new systems of social dynamics.

Tykot, Robert H., and Karen Hartshorn (both, Harvard)

[41] **The Source of Corse Obsidian: Neolithic Exchange in the Western Mediterranean**

The provenance of several hundred obsidian artifacts from neolithic sites in Corsica has been determined by wavelength-dispersive spectrometry using the electron microprobe. The analysis of 200 samples from nine stratigraphic levels at Basi (Serra-di-Ferro) represents the largest study every of obsidian exploitation at any one site in the western Mediterranean, and is singularly important for assessing chronological variation in obsidian exploitation. Our results contradict interpretations based

on earlier studies of small numbers of Corsican samples, and indicate that obsidian from five Sardinian sources are represented. Changing procurement mechanisms may account for differences between the Early and Late Neolithic periods.

Uruñuela, Gabriela (Universidad de las Américas): [66] (see *Plunket, Patricia*)

Uruñuela, Gabriela, Patricia Plunket, and Teresa Salomon (Universidad de las Américas)
[66] **The Petlachic Site: Small-Scale Ritual in Late Preclassic Puebla**
Petlachica, a settlement located on the lower slopes of the Popocatepetl volcano about 15 km west of Cholula, Puebla, was covered by volcanic ash during the Late Preclassic. Excavations at the site have revealed detailed information about small-scale ritual and the development of Teotihuacan-style architecture in western Puebla for this time period.

Vail, Gabrielle (Tulane)
[64] **The Gods in the Madrid Codex: An Epigraphic Approach**
An analysis of naming patterns represented in the Madrid Codex reveals that the T14.1016c "god" title recently identified by Ringle (1988) is used more than 50 times either in conjunction with or in place of a secondary figure's name glyph. The significance of this finding lies in the fact that it allows the possibility of unequivocally identifying the figures so referenced as deities for the first time. T1016c also substitutes for the main signs of various appellatives, including those of Gods E, H, and I. A second glyph, T1059, appears in many of the same contexts as T1016c, suggesting that the two may have had a similar function.

Valastro, Salvatore (Texas-Austin): [82] (see *Neely, James A.*)

Valdez, Fred (Texas-Austin): [13] (see *Scarborough, Vernon L.*)

Valerio, Wilson (Museo Nacional de Costa Rica): [90] (see *Salgado, Sylvia*)

Van As, Abraham (Archaeological Centre)
[58] **Pottery Production in the Ancient Near East: Recent Research of the Institute of Pottery Technology, Leiden University**
The Institute of Pottery Technology (Leiden University) studies the potter's craft in its entire scope: production, distribution and consumption. This also includes such questions as how to recognize and define production context, scale, organization and intensity. This paper goes into various aspects of pottery production in the Ancient Near East on the basis of the Institute's recent technological investigations of pottery from Mesopotamia, Anatolia, the Levant, and Egypt.

Van Gilder, Cynthia (California-Berkeley)
[79] **Archaeology and Cultural Identity in Hawaii**
Archaeological data may be drawn upon by ethnic groups looking for information about their pre-colonial past, but often the links which indigenous peoples choose to forge between past and present are different from those which archaeologists have constructed. What are the possibilities for reconciliation in such cases, and is this a goal for which we wish to strive? Using examples from the Hawaiian Islands, this paper explores the changing relationships among archaeologists and indigenous peoples from the theoretical perspectives of subject/object relations and ethnotheory.

Van Keuren, Scott (Arizona)
[126] **Pottery Design Execution and Population Movement in the 14th Century Southwest: A Case Study from the Grasshopper Region, Arizona**
Designs on prehistoric pottery in the Southwest have long been used to address issues of population movement. Coupled with recent chemical sourcing studies, which provide unambiguous identification of local versus nonlocal production, the potential for exploring demographic issues with stylistic data is greatly increased. This paper examines stylistic diversity in a collection of painted vessels from the Grasshopper Region of east-central Arizona. A nontraditional analysis of variation in design execution is used to explore population movement and cultural co-residence during the 14th century. This case study demonstrates the potentiality of a new technique for analyzing design styles on prehistoric pottery and other material classes.

Van Nimwegen, Lani (Navajo Nation Archaeology Department): [67] (see *Huffman, Jim*)

Van Wormer, Heather, and Timothy Scarlett (both, Nevada-Reno)
[43] **Rustling Cattle and Rampant Pigs: Faunal Analysis from Houselots at Shermantown**
Shermantown was a boom community in Nevada's White Pine Mining District. Between 1869 and 1870, an immigration rate averaging 100 people a day resulted in a population peak of about 3,000

people. By 1875 the population of Shermantown consisted of a single family. The University of Nevada, Reno, field school mapped and inventoried the town and developed a historical context for the site. Using the assemblages of several Shermantown house lots, and exploratory faunal analysis is conducted to access research potential in the areas of diet and foodways, the meat market and indicators of consumerism.

VanderHoek, Richard (Illinois-Urbana/Champaign)
[70] **The View from Overlook Sites in Eastern Beringia: Site Locational Factors in Late Pleistocene Alaska**

Less than a dozen archaeological sites in Alaska, the majority located in valleys on the north side of the Alaska Range, contain cultural materials with dates greater than 11,000 years B.P. These sites can be classified as "overlook" sites, usually located on the north sides of streams or rivers with views to the south. Other important intersite variables include exposure to wind, height above surroundings, and composition of lithic and faunal assemblages. These and other environmental and cultural data suggest aspects of past lifeways that will constitute the basis of further testing in the study of northern Late Pleistocene subsistence and settlement.

Vandiver, Pamela B. (Smithsonian): [16] (see *Soffer, Olga*); [58] (see *Henrickson, Robert C.*)

Vargas-Arenas, Iraida
[63] **La Arqueología Social: Una Arqueología Alternativa al Paradigma Anglo-Americano**
Se plantea en esta ponencia como los paradigmas anglosajones en el Caribe han contribuido a profundizar la separación entre las sociedades del pasado y las del presente, impidiendo la gestación de verdaderas conciencias históricas, bases imprescindibles para la consolidación de los Estados Nacionales en la Región. Por otra parte, se plantea como la Arqueología Social que hemos venido practicando un grupo de arqueólogos latinoamericanos constituye una alternativa válida ante esta situación, implicando un compromiso por parte de los arqueólogos no solo de carácter académico sino también y fundamentalmente de carácter político. Se enfatiza el papel de la arqueología comprometida socialmente en la búsqueda de las causas de las crisis sociales-culturales-económicas de la Región Caribe, y el papel fundamental que tiene la educación en tal proceso.

Varien, Mark (Crow Canyon Archaeological Center)
[118] **Sedentism and Mobility in Agricultural and Horticultural Societies: Beyond Ecological Determinism**

Studies of sedentism and mobility in the American Southwest have increasingly focused on a framework borrowed from hunter-gatherer research. These studies examine seasonal movement within an annual round and stress the ecological determinants of mobility. In this paper, I argue that the social and temporal scales of hunter-gatherer studies are inadequate for understanding the sedentism and mobility of societies with horticultural and agricultural economies. To begin to develop the method and theory for studying mobility strategies in horticultural and agricultural societies, I examine the residential movement of households and communities within the Mesa Verde region between A.D. 900 and 1300.

[78] (see *Potter, James M.*)

Verhagen, Inez (Vanderbilt): [125] (see *Fowler, William R.*)

Vivian, R. Gwinn (Arizona State Museum)
[93] **Agricultural Strategies of the Chacoan Anasazi**
Chacoan culture evolved in the San Juan Basin, one of the most arid zones occupied by the Anasazi. Most agricultural strategies employed within the Basin were common to other Anasazi areas. In contrast, specialized techniques for crop watering, erosion control, and nutrient replacement typified some farming systems within Chaco Canyon. Some system features were adapted to locales adjacent to the canyon, but there is no evidence for more distant deployment of the features within the Basin. Though localized topography and hydrology may account for this variability, social factors were more critical.

Voigt, Mary M. (William and Mary)
[84] **Çatal Hüyük in Context: Ritual at Early Neolithic sites in Central and Eastern Turkey**
A critical step in any study of prehistoric religious systems is the reconstruction of specific human activities associated with supernatural beings (i.e., "ritual"). Among the artifacts consistently linked to ritual in textually and ethnographically documented societies are figures of humans and animals. Ucko has suggested a classification system for ethnographic figures based on function (ideology and associated behavior). These classes can be directly linked to the archaeological record through patterns of artifact wear and deposition, as well as morphological attributes. This paper uses form, wear, and location to reconstruct ritual activities at 8th-7th millennium sites in Turkey.

Volmar, Michael (Massachusetts-Amherst)

[102] **Pine Hill Micromorphology Project**

The project aims to employ soil micromorphological analysis to archaeological questions concerning subsoil feature interpretation. Extant discussions on pit feature relevance, interpretation, and excavation are presented and discussed. Field research from Pine Hill in the middle Connecticut River Valley and the results of the laboratory analysis are presented. The discussion focuses mainly on problems associated with pit feature interpretation. The results will demonstrate the applicability of soil micromorphology to archaeological interpretation, and strengthen theoretical arguments in archaeology related to cultural complexity and reasoning by analogy.

Voorhies, Barbara (Colorado)

[90] **Stalking the Coastal Archaic: A Late Archaic Coastal Plain Site on the Soconusco Seaboard**

Vuelta Limón, a buried site exposed in a river bank in the upper gradient of the south Pacific coastal plain of Mexico, was investigated in 1994. Excavations revealed a dense concentration of waterworn and fire-cracked rocks, as well as some stone tools. Most ecofacts were not preserved but phytolith studies will allow detection of some ecological attributes of the ancient occupants. The deposit is interpreted as a discard area for a "permanent" settlement, probably a residential base of the same Chantuto people who were responsible for the huge shell mounds located in the coastal wetlands, downstream from this site.

Voytek, Barbara (California-Berkeley)

[76] **Socioeconomic Transition in the Mediterranean: The Case for Regional Diversity**

The problem of the relations between mesolithic hunting-gathering populations and those described as neolithic food producers is a complicated one. Among the reasons for the complications are environmental differences among geographic regions which impact upon the breakdown of mesolithic, and the development of neolithic, economies. Because of these differences, attempts to synthesize the process of neolithization over a large area produce limited results. In this paper, therefore, one region is examined in detail, the Northern Adriatic. Comparisons are derived with other regions of Northern Italy insofar as they help elucidate the variability of the socioeconomic transition from hunting-gathering to food production in the Mediterranean between the eighth and sixth millennia B.P.

Wagner, Erika (IVIC, Venezuela)

[127] **Gerardo Reichel Dolmatoff and Venezuelan Archaeology: 50 Years of Creativity**

In this paper, I would like to recreate Reichel-Dolmatoff's direct and indirect inspiration on the archaeologists who have worked in Venezuela during the last five decades. In recent years, his influence was perhaps more strongly felt in lowland tropical areas due to his pioneering research in coastal Colombia, where he showed that this area was a major center for population movements, agricultural evolution and ceramic development. Nevertheless, equally essential was his 1954 paper "A Preliminary Study of Space and Time Perspective in Northern Colombia" which in part enabled Gallagher in his La Pitá monograph (1976) to offer his valuable sequence of cultural development for the Maracaibo Basin. Sanoja's research south of Lake Maracaibo and Wagner's work in the Andes and Lake Maracaibo. More recently, Arvelo (1987) and Oliver (1989) proposed new models for cultural development in northwestern Venezuela, again inspired in part by Reichel.

Wake, Thomas A. (California-Berkeley)

[124] **Bone Tools and Tool Production at Colony Ross: Persistence of Prehistoric Technology at a European Trading Colony**

Bone tools played an integral role in the success of Russian-American Company marine mammal hunting operations in California during the early nineteenth century. The company's base in California was Colony Ross, in Sonoma County. The colony was populated by three main groups of people: Russians, Alaskans, and Californians. The presence and continued production of prehistoric Alaskan tool types at Ross indicates the persistence of aspects of traditional Alaskan worldview in California. Analysis of bone tools and production debris from Ross provides insight regarding the ethnicity of the manufacturers and the importance of traditional technology at a European colony.

Walker, Debra S. (Florida International)

[94] **New Research at Cerros, Belize**

Recent archaeological research at Cerros, Belize is illustrative of the collaborative efforts of researchers, local residents and government officials to implement policies which preserve nonrenewable resources and incorporate them into the local economy. At Cerros, we are seeking archaeological information which will inform nearby villagers as well as international visitors. We also seek long-term site maintenance solutions which are low cost and easily managed. The unique

Late Formative site offers opportunities to researchers and economists alike to build a sustainable future for Belize's past glories.

Walker, Ian J.: [71] (see *Desloges, Joseph R.*)

Walker, John H. (Pennsylvania)

[90] **A Prehispanic Urn Burial from the Llanos de Moxos, Bolivia**

The earliest European travelers in the Amazon basin described riverbanks lined with human settlement. Along the upper Amazonian rivers of the Llanos de Moxos in eastern Bolivia, survey and excavation in the summer of 1994 revealed a system of raised fields, canals and causeways, in addition to occupation sites. The first controlled excavation of an urn burial in this region is presented, in relation to this context of a constructed, agricultural landscape.

Walker, William H., and Vincent L. LaMotta (Arizona)

[85] **Life Histories as Units of Analysis: Scaling Explanations for Behavioral Variability and Change**

Life history studies play a prominent analytical role in the biological, physical, and social sciences; this paper demonstrates the utility of this approach for expanding the scope of archaeological analyses of human behavior. Defining object life histories allows one to explore diverse scales of behavioral variability that frame explanations for behavioral change. Major theoretical differences among contemporary programs, including processual, behavioral, evolutionary, and Marxist archaeologies derive largely from the different scales of life history analysis through which these programs approach the study of the archaeological record.

Wallert, Arie (Getty Conservation Institute): [32] (see *Boytner, Ran*)

Walling, Stanley L., Sharon Misdea, and Roberta McIntyre (all, Montclair State)

[13] **1993-1994 Settlement Investigations on the Rio Bravo Floodplain, Belize**

Two seasons of settlement investigation along a three km transect in the Rio Bravo floodplain have revealed a wetland-associated occupation zone south of Dos Hombres where middle to terminal Late Classic population expansion, occupational concentration, and terrace construction turned a sparsely settled region into an area of dense habitation. This settlement shift was part of a regional pattern of population expansion, intensification of land use, increased land modification, and changing settlement type at the close of the Classic period.

Wallsmith, Debbie, and John Cable (both, New South Associates)

[120] **Between a Rock and a Hard Place: The Analysis of Lithic Assemblages from the North Georgia Mountains**

In 1993 New South Associates excavated three multicomponent sites in the Brasstown Valley in northern Georgia. Funding for the Mountain Park Project came from the Georgia Department of Natural Resources. Fifteen separate loci were identified ranging in age from Early Archaic to Late Mississippian, in addition to a historic Cherokee component. Almost 250,000 lithic artifacts have been recorded. The lithic analysis provides the basis for a discussion of the local cultural chronology and its relationship to surrounding areas; regional interaction and cultural relations; and diachronic changes in lithic technology, site usage, and raw material selection and preferences.

Walters, Rachel, and Jeff Kowalski (both, Northern Illinois)

[114] **The Murals of Mul-Chic as Possible Evidence for Maya State Formation in the Puuc Region, Yucatan**

The murals of Mul-Chic, Yucatan feature multi-figure scenes including a procession of rain god impersonators and a dynamic and graphically violent battle scene. We discuss these images as evidence for a process of the consolidation of the Eastern Puuc region by military force. Dunning and Kowalski recently have interpreted settlement pattern and iconographic evidence to support the idea that Uxmal, in alliance with Kabah and Nohpat, became the capital of a regional state by around A.D. 900. The strong parallels between costume and regalia of the Mul-Chic figures and those of Uxmal and other late Puuc centers supports the idea that the mural's battle scene "documents" the military expansion of Uxmal and its allies during the late 9th century.

Walwer, Dorothy N.: [14] (see *Walwer, Gregory F.*)

Walwer, Gregory F. (Yale) and *Dorothy N. Walwer*

[14] **Technological Change and Subsistence Continuity in a Southern Plains Ecotone: The Hokiabse Rock Shelter**

The Hokiabse Rockshelter is located in the Cross Timbers region of the Southern Plains, between the prairies to the west and the oak-hickory forests to the east. This ecotone setting contains a

diverse resource base with elements of both surrounding ecoregions. As reflected in the archaeological record of the site, this diversity encourages a stability in human use of resources through time despite broad paleoclimatic or technological changes. In a stable ecotone environment which provides resource stability, aspects of technological change are best explained as a result of cultural trajectory and diffusion within the broader region.

Wang, Bing (Toronto): [77] (see *Hurley, William M.*)

Warburton, Miranda (Navajo Nation Archaeology Department): [35] (see *Powell, Shirley*)

Warburton, Miranda, and Phil R. Geib (both, Navajo Nation Archaeology Department)
[67] **Excavations Within the Navajo Mountain Road Row: Is the Cup Half-Empty?**

Definable loci on the landscape served as focal points for suites of activities undertaken by prehistoric people to maintain and perpetuate their physical and social well-being. Arbitrary lines across the prehistorical landscape drawn by modern developers all too often limit our archaeological understanding to an unconnected subset of the entire suite of activities represented. For certain types of sites of certain time periods, there is no context within which to interpret the arbitrary slices of archaeological remains recovered within a ROW. These issues are examined using recent excavation findings within the ROW for the Navajo Mountain Road.

Ware, John (Museum of New Mexico)

[35] **Multidisciplinary Investigations of Late Prehistoric Agricultural Field Systems in Northern New Mexico**

Recent archaeological investigations in the lower Chama and Ojo Caliente Valleys of northern New Mexico have documented extensive direct rainfall agricultural systems associated with a number of late prehistoric Pueblo Indian communities. One of the most common field types consists of a rectangular cobble grid filled with pebble-sized mulch. Most of these "gravel-mulched" fields are located on high gravel terraces some distance from the nearest permanent water and, in many cases, several miles from the nearest prehistoric community. This paper describes recent multidisciplinary attempts to understand when these systems were constructed and used, what crops were grown, how the energy, nutrient, and hydrologic budgets of the features influenced crop productivity, and how construction techniques differed under differing topographic and hydrologic situations.

Watanabe, Hirokatsu (Terra Information Engineering): [136] (see *Shimada, Izumi*)

Watchman, Alan (Data-Roche Watchman) and *Daniel Arsenault* (Célat, Laval)

[46] **Dating and Analyzing a Pictograph Site in the Far-Eastern Canadian Shield: The Nisula Site (DdEh-1)**

The Nisula site studied by our multidisciplinary team is the Easternmost pictograph site known in the Canadian Shield. Anthropomorph, zoomorph, and supernatural figures are identified in the 140 morphs on the glacially polished cliff. The morphs show strong similarities to those depicted on other Boreal Forest sites, perhaps signifying the diffusion of similar religious concepts across a wide area of North America. AMS radiocarbon dating of the painted surface at Nisula is currently being undertaken. Archaeological, ethnohistorical, ethnographical and other types of evidence is presented in considering the physical and cultural context of the pictograph-site.

Waters, Michael R. (Texas A & M): [87] Discussant

Waters, Michael R. (Texas A & M), *Steven Forman* (Ohio State), and *James Pierson* (Ohio State)
[70] **Diring Yuriak: A Lower Paleolithic Site in Central Siberia and its Implications to the Pleistocene Peopling of the Americas**

Archaeological investigations by Yuri Mochanov at the Diring Yuriak site on the highest terrace of the Lena River, 125 km south of Yakutsk (62° N latitude) in central Siberia, have revealed a Lower Paleolithic occupation. Mochanov has identified a quarry area with unifacial choppers and flake debris clustered in activity areas around large anvils. Geoarchaeological investigations reveal a complex sequence of alluvial and eolian deposits. Thermoluminescence age estimates place this stratigraphy in time and indicate that the cultural horizon is greater than 250,000 years old. Such an early occupation of Siberia has important implications to both Old and New World archaeology.

Watkins, Joe (Bureau of Indian Affairs): [106] Discussant

Watson, Patty Jo (Washington-St. Louis) and *Charles L. Redman* (Arizona State)

[109] **The Hilly Flanks and Beyond**

The interdisciplinary research pioneered by Robert J. Braidwood in the 1950s was directed toward recovering empirical evidence for the origins of food-producing economies in southwestern Asia.

We explore, in retrospect and prospect, some ramifications of that research orientation and trajectory.

Wattenmaker, Patricia (Virginia)

[40] **Untangling Perceptions of Specialists and Consumers: A Case Study from Ancient North Mesopotamia**

Efforts to understand specialized economies often implicitly assume that producers and consumers shared similar goals as they shifted to a more specialized economy. Data from several north Mesopotamian sites serve to illustrate how craft specialists and consumers may have had differing objectives. Some of these goals may have been complementary, whereas others seem to have conflicted. Distinguishing between objectives of producers and of consumers provides new insights into the rise of early urban economies.

Watters, Harold W. (Southern Illinois-Edwardsville): [14] (see *Dalan, Rinita A.*)

Wayman, Michael L. (Alberta)

[98] **Native Copper in the Squier and Davis Collections**

E. G. Squier and E. H. Davis carried out extensive surveys and excavations of the Woodland mounds of the Ohio Valley area during the 1840s. The excavated copper objects, which are now in the collections of the Museum of Mankind, London, have been studied using modern materials analysis techniques. The objects are found to be native copper, as expected, most damaged by heat but many with recognizable shapes. This contribution reports the results of the analyses of these objects, with discussions of the technologies employed in their manufacture.

Weaver, Guy G. (Garrow and Associates)

[115] **El Parking Site (PO38): Late Saladoid/Early Ostionoid Transitions in the Cerrillos River Valley, Puerto Rico**

Archaeological data recovery at El Parking site (PO38) revealed stratified deposits dating from the 6th through 13th century A.D. which chronicle the transition from late Cedrosian Saladoid to late Ostionan/Elenan Ostionoid within an upland context. This paper describes the ceramic assemblages on the basis of minimum vessel counts, vessel form and size, decoration, paste, and wall thickness. Other topics discussed include patterns of lithic raw material and reduction technology, intrasite variability, and stone alignments. These data are used to argue for the establishment of local classificatory units (phases) between the level of style and component.

Weber, Andrzej (Alberta)

[63] **Ideological and Political Biases in Soviet Siberian Archaeology: A Case Study of A.P. Okladnikov and the Neolithic of the Lake Baikal Region**

The region of Lake Baikal, Central Siberia, contains, perhaps, the richest archaeological evidence for Holocene foragers in the entire Subarctic. In the 1950s, A. P. Okladnikov, for many decades the most prominent personality in the history of Soviet Siberian archaeology, presented a model of social evolution of local foragers in which he suggested a gradual transition from matriarchal to patriarchal social relations accompanied by a subsistence change. The model dominated the research on the subject for several decades, and its heritage continues to affect even the most recent work. This paper argues that the model is to a large extent an effect of political and ideological pressures of the time when it was devised. It demonstrates how the data were manipulated and attempts to explain why these distortions were perpetuated. It concludes that Western archaeologists, exploring today's research opportunities in the former Soviet Union with a rejuvenated interest, should be very cautious while studying Soviet archaeological literature in original and especially in translation where many details are deliberately omitted.

Weber, Steven A. (Washington State-Vancouver)

[96] **Distinguishing Change in the Subsistence and the Material Records: The Interplay of Environment and Culture**

Around the second millennium B.C., localized subsistence strategies with different dietary practices shifted to a more standardized system over a large area in northwestern South Asia. At the same time and in the same area, the material and settlement record implies that a centralized, standardized and well-integrated culture was changing into different localized cultural units with varied artifactual styles. How do these two seemingly divergent processes interrelate? Some answers may come from analyzing the environmental limitations of this area, changes in the pattern of species being exploited, and the impact of humans on their habitat over time.

Webster, Ann D. (Kentucky)

[11] **Tiwanaku Camelids: Subsistence and Sacrifice in the Heartland**

Archaeologists have long known that llamas and alpacas formed an important part of the polity's

economic base. Usually, however, camelids' secondary functions, such as cargo-carrying and wool-producing abilities, are emphasized. Intensive analyses carried out in the Tiwanaku Valley demonstrate that camelids were also important as both sources of meat and as ritual offerings. First, evidence suggests that both young and old animals were being butchered, indicating that camelids were important in providing meat. Second, remains of articulated, semi-articulated, and dismembered camelids were uncovered in strategic loci around pyramids, beneath floor contexts, and within tombs, indicating their clear ceremonial significance.

Webster, David (Pennsylvania State): [15] Discussant

Weed, Carol S. (Gray & Pape)

[35] **The Brownware Quagmire East of the Pecos: Ceramic Supertypes and the Ware/Type/Variety System**

Present classifications for the prehistoric utilitarian ceramics of eastern New Mexico and western Texas and Oklahoma are problematic. Since work by Jelinek and others, some researchers have either inappropriately applied ware or type names or have created new types or varieties without understanding parent ware definition or the theoretical underpinnings of the ware/type/variety system. Certain wares, for example, Jornada Brown Ware, have become supertypes, hence losing their temporal and spatial meaning. An analysis of the extant literature suggests that a solution to this analytical quagmire may lie in strict adherence to ware/type/variety principles.

Weiss, Pamela J. (Montreal)

[90] **Preliminary Results from the Excavation of a Jade Cache at the Site of Blue Creek, Orangewalk District, Belize**

At the end of the 1994 field season, a jade cache was discovered. The sealed deposit was capped by a stela and a massive limestone disk, shaped by the grinding of its edges and central opening, under which a coursed stone shaft had been built to a depth of 5.6 m. Contents of the cache included 892 worked jade pieces (ear flares, beads, pendants, and plaques) with 368 of them situated within a lip-to-lip vessel placement. Additional materials recovered include two distinct ceramic types; freshwater and marine shells; stone, coral, and bone beads; and a large cruciform chert eccentric as well as human remains.

Weiwien, Huang (Institute of Vert. Paleontology and Paleoanthropology, Beijing): [119] (*see Miller-Antonio, Sari*)

Welch, James M. (Frontier Archaeology): [103] (*see Prentiss, William C.*)

Welch, Paul D. (Queens)

[40] **Strategies for Control of Craft Production in Chiefdoms**

Elite control over craft production in chiefdoms cannot be explained in terms of economic domination or physical coercion of the producers. Instead, such "control" represents a mutually advantageous match between the interests of the producers and the interests of the elite. Both sets of interests constrain the range of craft items that would be suitable candidates for such control, suggesting that it may be possible to predict what sorts of craft items will be controlled. Archaeological data from Mississippian chiefdoms are compared with these predictions.

Welker, Eden, and Douglas R. Parker (both, Colorado)

[107] **Corn and More? A Study at Pueblo San Marcos, New Mexico**

Motives beyond risk minimization may lie behind agricultural intensification during the Rio Grande Classic period. The authors performed soil sampling and additional groundtruthing of the rich agricultural area surrounding Pueblo San Marcos in New Mexico's Galisteo Basin. Unexpectedly, a complex system linking multiple field types and water-control devices was found, implying a high degree of agricultural planning. In addition, initial soil chemistry tests suggest a diversification of crop type according to field type. This discovery cautions against assuming food was the primary agricultural product and suggests that "cash," not subsistence, crops may have been important at certain towns.

Wells, Peter S. (Minnesota)

[27] **Identities, Material Culture, and Change: "Celts" and "Germans" in Late Iron Age Europe**

Traditionally, archaeologists have relied heavily on written Greek and Roman sources for study of migration and change in Late Iron Age temperate Europe. Yet the texts and the archaeology rarely coincide. An approach that focuses on material culture as an active agent of ethnic and cultural identification offers a new perspective on migrations and shifting identities in this dynamic period.

It enables us to view the observed changes in terms of modern understanding of the situational and variable nature of cultural identities.

Wendorf, Fred (Southern Methodist): [67] Discussant

Wernecke, D. Clark (Florida Atlantic): [73] (*see Ford, Anabel*)

Wesson, Cameron B. (Illinois-Urbana/Champaign), *John W. Cottier* (Auburn), and *Craig T. Sheldon* (Auburn-Montgomery)

[129] **Distributional Aspects of Settlement Structure Along the Lower Tallapoosa River**

Recent research and historical information indicate the presence of a sizable Mississippian population along the Lower Tallapoosa River valley in central Alabama. This study shows that Mississippian sites in the Lower Tallapoosa River valley have a distinct settlement pattern, and that this pattern is quite different from that of other Mississippian settlements in Alabama. In addition, analysis indicates that the Mississippian settlement pattern identified in this study is similar in structure, yet distinctive from historic Creek settlement in the same region. This settlement pattern is assessed for implications concerning social organization and polity structure within and between these Mississippian communities.

West, W. R.: [122] Participant

Wheat, Pam (Crow Canyon Archaeological Center)

[91] **Process: Archaeology as Scientific Method; Issues and Ethics**

Whelan, Mary K., Margot Neverett, and William Green (all, Iowa)

[33] **From Consumption to Production: Reconceptualizing Archaeological Subsistence Analysis**

Subsistence analyses traditionally focus on production; we argue that analysis should begin with consumption since consumption decisions precede and structure productive activities. Consumption decisions can be conceptualized at long-, intermediate-, and short-term scales. We apply this framework to the analysis of the Gast Farm site (13LA12), an early Late Woodland horticultural village in southeastern Iowa. Floral and faunal diversity indices and distributional patterns examined in this way more accurately characterize this community's subsistence economy, and provide a basis for comparisons with predecessor Havana communities. Such work should shed new light on the processes involved in the Middle to Late Woodland transition.

White, Christine (Western Ontario): [12] (*see Schwarcz, Henry P.*)

White, Joyce C. (University of Pennsylvania Museum)

[96] **Wet Rice Agriculture: Environment Transformer? or Environment Expander?**

Cultivation of inundated rice has long been considered a transformative use of the environment whereby a diverse ecosystem is replaced with a monocrop. While in highland and equatorial tropical environments this may be the case, in subtropical areas exploited by the earliest rice agriculturalists, ethnoecological research suggests that wet rice cultivators merely expanded areas where wild rice naturally occurred, and forest replacement was minor. This paper reports on research undertaken by the Thailand Palaeoenvironment Project which seeks to examine the environmental conditions into which early rice agriculturalists expanded from about 5,000 years ago, and the impact of these agriculturalists on Thailand's landscape and vegetation.

Whitley, David S.

[17] **Art, Myth, and Ritual in the Far West**

Anthropological interest in the relationship between art, myth and ritual has a long history, running from Durkheim through Boas to Levi-Strauss. Archaeological concern, in contrast, has been naive and undeveloped: e.g., human and animal figures in prehistoric art are often claimed to be mythic actors, with putative "scenes" said to represent mythic events. Inasmuch as durable art is a primary archaeological expression of ideology and cognition, it follows that archaeologists' consideration of art should be based on a realistic model of the relationships between art, myth and ritual in different societies. Using ethnohistorical data from the far west, I provide a model of these relationships for three different groups, illustrating the variability that may exist even among hunter-gatherers.

Wiant, Michael D. (Illinois State Museum) and *Charles R. McGimsey* (Southern Illinois-Carbondale)

[104] **Middle Woodland Building Function in Illinois**

This paper presents the results of an analysis of evidence of 29 Middle Woodland (ca. 2050-1800 B.P.) buildings in Illinois. Comparison of building context, architecture, facilities, and artifact assemblages indicates functional differences. While the function of most of these buildings can be

described as secular, the example from Napoleon Hollow site appears to have had a ritual function. After discussing discriminating variables, we consider implications about Middle Woodland lifeways.

Wicker, Nancy L. (Mankato State)

[128] **The Women of Birka: Status and Power During the Period of Early Missionary Activity**
A dearth of female mortuary remains has been noted for much of Scandinavia; however, women's burials outnumber men's at the early Viking Age (ca. A.D. 750-900) trading center of Birka in central Sweden. This paper examines mortuary evidence to elucidate the manifestation of status and social organization. Rather than indicating a preponderance of women at Birka, the greater number of women's graves there may represent graves that are easier to identify because of their contents and also may reflect Christian missionary activity. A gendered conversion occurred in Sweden with women serving as mediators between Christian and native ideologies.

Wilhelmsen, Kris H., and Kim D. Kornbacher (both, Washington)

[22] **Style and Function at the Artifact Scale: A Fundamental Dichotomy Revisited**

A shared goal of evolutionary archaeologists is understanding how and why properties of populations and environments interact to produce traits conferring greater or lesser fitness. Realizing this goal requires identifying selectively neutral (stylistic) and selectively advantageous (functional) traits. However, a tradition of identification founded in common sense has caused confusion among archaeologists regarding the role of these concepts in evolutionary explanation. Style and function are not intrinsic, mutually exclusive properties; rather, they are hypotheses which may be operationalized at the artifact scale using distributional tests in both temporal and spatial dimensions. The process is illustrated using recent data from Ecuador and Missouri.

William, Jerry D. (Northern Arizona), *Matthew J. Root* (Washington State), *Lisa Shifrin* (Northern Arizona), and *Stanley A. Ahler* (North Dakota)

[70] **Folsom Tool Manufacture in the Knife River Flint Quarry Area, North Dakota**

Evidence from three Folsom sites (32DU955A, 32DU955C, 32DU955D) suggests that flint-knappers staged tool manufacture within the Knife River flint source area. One quarry-workshop site mainly contains early stage preforms, with few preforms broken during fluting. Most Folsom points are technologically finished. Other camp-workshops contain many preforms broken during fluting, with fewer completed points and early stage preforms. Nonlocal lithic materials also suggest that the sites are closely linked. The pattern: Folsom knappers dismantled broken weapons, gathered stone, and made preforms at one site; the same knappers completed manufacturing/retooling processes at nearby, separate sites.

Williams, Matthew (Texas-Austin): [92] (see *Creel, Darrell*)

Williams, Patrick Ryan (Florida)

[90] **The Rise of High Elevation Irrigation Agriculture in the South-Central Andean Sierra**

The appearance of high elevation agricultural systems in the Andes represents a great leap in irrigation technology. Construction and maintenance of irrigation systems of this type involves a higher degree of social organization than traditional valley bottom farming. This study employed detailed mapping of terrace systems in the Moquegua drainage of southern Peru in order to reconstruct agricultural hydraulics in the Middle Horizon, Late Horizon, and modern eras of Peruvian history. In this paper, social and political organization of the agricultural economy are interpreted for the Wari, Estuquina/Inca, and modern campesino communities through the analysis of hydraulic systems.

Williamson, Dan

[7] **Excavation Safety Equipment and Archaeology**

Willis, John A. K. (Northwestern)

[72] **Archaeological Surface Collections: A Methodology to Counter Distortions in the Graphic Illustration of Material Densities which Result from Inter-Collector Biases**

In 1991, Northwestern University Field School conducted a systematic pedestrian survey on 21,500 square meters of what is probably the western edge of the Zimmerman site (11Ls13), near Utica, Illinois. Material density maps were generated in ATLAS*GIS based on the laboratory analysis of collected material. These maps illustrate that graphic representations of surface collections can be distorted by inter-collector biases introduced during surface collections. A methodology which changes the absolute values of materials collected in each grid to relative amounts, such as whether it is above or below each collector's mean, is suggested to correct such distortions.

Wilshusen, Richard H. (Crow Canyon Archaeological Center)

[118] **Great Pueblo Period Reservoirs in the Mesa Verde Region**

Although at least 20 large (25,000-gallon capacity or greater) prehistoric reservoirs are known in the Mesa Verde region, the design, construction, chronological placement, and function of these reservoirs are poorly understood. Excavation of one of these features by Crow Canyon in 1994 allows us to evaluate possible explanations about reservoir construction and use. Other archaeological and cross-cultural ethnographic data support the notion that these reservoirs are public features associated with the last Puebloan occupation of the northern Southwest and that they may be markers of the centers of post-A.D. 1150 communities.

Wilson, Deborah: [36] (see *Spiess, Arthur E.*)

Wilson, Diane (Texas-Austin)

[18] **Engendering the Mississippian Powers Phase Turner Cemetery Population**

The Turner cemetery was a Middle Mississippian Powers Phase site located in Butler County, Missouri. Of the 81 adults who could be sexed, 55 were female. This paper explores the role of women within the Powers Phase. Burial patterns suggest that women played a central role in a possibly matrilineal Powers Phase village life. Mortality profiles suggest that females within the Powers Phase had considerable control over reproduction. Females may also have had control over food distribution as indicated by heterogeneous diets, while males had homogenous diets indicated by stable isotope values.

Wilson, Douglas C. (Archaeological Investigations NW)

[133] **Secondary Refuse Aggregates in the Willamette Valley, Oregon: An Explicitly Refuse-Oriented Approach to the Study of Middle and Late Archaic Period Settlement and Socioeconomic Adaptation**

Archaeological sites are structured by and their contents inextricably linked to refuse disposal behavior. Through a strict refuse-oriented approach to archaeological sites, new insights on prehistoric cultures can be made. The identification of the fundamental properties of refuse disposal by the semi-mobile hunter-gatherers who inhabited central Oregon provides an analytical framework for the interpretation of regional settlement patterns and common site structure. The identification and assessment of secondary refuse aggregates in the Willamette Valley suggests customary use of resource procurement areas by prehistoric groups and the emergence of a regional ethnic identity.

Winham, R. Peter, and L. Adrienne Hannus (both, Augustana)

[110] **Village Sites of the Middle Missouri Subarea A.D. 1000-1887—A National Historic Landmark Theme Study**

A theme study has been completed in support of a Multiple Property National Historic Landmark Nomination of Plains Village sites along the Middle Missouri Subarea in North and South Dakota. This paper provides an overview of the study, including Historic Context Organization and National Historic Landmark Criteria. The paper will focus on the national significance of these sites and review significant research directions. Existing Landmark sites and sites being nominated under this theme study will be illustrated.

Winsborough, Barbara M. (Winsborough Consulting): [82] (see *Neely, James A.*)

Winter, Joseph (New Mexico)

[67] **Across the Colorado Plateau: Anthropological Studies for the Transwestern Pipeline Expansion Project**

Large scale archaeological excavations and related mitigation studies do not necessarily have to be restricted to narrow rights-of-way. Depending on the project research design and the interests and abilities of the archaeologists working in the project and in the state, tribal, and federal compliance agencies, more comprehensive projects can be designed, negotiated, and carried out. This paper discusses excavations, surveys, ethnology studies, and other research carried out for the Transwestern Pipeline Expansion Project, outside of the pipeline corridor. The overall research design addressed communities, boundaries, and cultural variation across the Colorado Plateau.

Winthrop, Kate (Bureau of Land Management)

[80] **Practical Guidance: Integrating Archaeology into Ecosystem Management**

Archaeologists, cultural resource managers, and professionals in related disciplines are faced with the problem of integrating their areas of knowledge into studies which support ecosystem management and policies. Relevant issues include defining the types of questions and studies which contribute to ecosystem studies; identifying the analytic tools available for these studies; working in an interdisciplinary framework; and communicating information across disciplinary lines.

Development of research tools such as a workbook and/or regional research networks will assist professionals in these tasks.

Wise, Alicia L. (North Carolina): [14] (*see Hargrove, Thomas*)

Wise, Karen (Los Angeles County Museum of Natural History)

[89] **From Chinchorro to Quiami: Archaic Period Sedentism and Population Aggregation on the South-Central Andean Coast**

Early to Middle Archaic Period (ca. 9000 to 5000 B.P.) settlement patterns on the south-central Andean coast are characterized by small villages, shell middens and other special use sites. Late Archaic Period (after 5000 B.P.) villages are larger, containing substantial architecture and signs of sedentism. The causes for changes in settlement adaptations appear to include environmental changes and cultural factors such as increasing population, specialization and intensification of fishing. This paper explores the interplay between environmental and cultural factors in the shift from Middle to Late Archaic subsistence and settlement strategies on the south-central Andean coast.

Wobst, H. Martin (Massachusetts-Amherst)

[113] **Archaeologists and the Culture of Materiality**

Along many dimensions, vernacular archaeological method, in survey, excavation, and analysis, biases culture and culture theory toward those ends of human motion that are the most consumptive, transformational, and destructive. The end of human material production in the archaeological limelight is only one part of the range of human material production and avoidance of material production. This end varies in its preponderance intra- and interculturally, and cannot be understood without theorizing about (and sampling along) the entire range of human production. The problem and its solutions are exemplified with archaeological case studies from hunter-gatherer contexts.

Wolley, Claudia (Vanderbilt): [52] (*see Demarest, Arthur*)

Wood, W. Raymond (Missouri): [110] Discussant

Woodall, J. Ned (Wake Forest): [129] (*see Idol, Bruce*)

Woodhouse-Beyer, Katharine (Brown)

[23] **Reinterpreting the Russian-American Company: Artels, Gender, and the Kodiak Archipelago**

Previous scholarship on the contact period of the Kodiak archipelago had largely focused on the maritime hunting of conscripted native menfolk in Russian-American Company employment. A review of the available ethnohistorical literature, as well as recent archaeological research, suggests that, by contrast, women were not only present at artel settlements, but were the mainstays of both traditional and Russian American economies. Preliminary results of excavation at the Igvak artel shed new light on gender relations and economic production in Russian America.

Woodman, P. C. (University College, Cork, Ireland)

[117] **From Mesolithic to Neolithic: Looking for a Baseline for Britain and Ireland**

The study of the transition from the Mesolithic to the Neolithic in the islands of Britain and Ireland shows the emergence of a series of distinctive regional cultures but the study of how these changes took place has been complicated by both a lack of good settlement sites and, perhaps, by a lack of critical evaluation. This paper evaluates, in particular, the chronological evidence and suggests that the archaeologists have often allowed scholars working in related disciplines to dictate the terms of reference in this area of study.

Woodson, Kyle (Texas-Austin)

[107] **Documenting a Migration: The Goat Hill Site, a Western Anasazi Pueblo in the Safford Valley of Southeastern Arizona**

Recent research involving the Goat Hill Site is reported. The site is a 36-room masonry pueblo, with a D-shaped kiva, located in the Safford Valley of the Gila River in southeastern Arizona. The site is described, and compared and contrasted to contemporaneous sites in Arizona—particularly to sites south of the Mogollon Rim exhibiting traits similar to western Anasazi sites in northeastern Arizona. Evidence is presented suggesting that these sites, including the Goat Hill Site, were occupied by groups who migrated from the western Anasazi (Kayenta and Tusayan) area during the mid- to late 13th century.

Woodward, Michelle R. (Texas A & M)

[37] **Provenience Studies of Surface Obsidian Artifacts from the Northern Ridge of Lake Atitlan, Guatemala**

Neutron Activation Analysis (NAA) has determined the chemical characteristics for one hundred obsidian artifacts collected from surface surveys along the northern shore of Lake Atitlan, Department of Sololá, Guatemala. Sixty-six samples collected and tested from three obsidian sources (El Chayal, Rio Pixcaya, and Ixtepeque) provide a comparative database for the artifacts. Results indicate Rio Pixcaya as the source for the majority of the obsidian artifacts. The dominance of Rio Pixcaya obsidian discounts the possibility of a local source while supporting a complex trade network similar to those of the Maya lowlands.

Woody, Alanah (Nevada-Reno)

[121] **Tired Techniques with New Interpretations: New Perspectives on Rock Art from Tired Dam, Oregon**

Current theories of Rock Art focus on the limited view that it is a shamanic expression of spiritual or psychological behavior. This lack of theoretical diversity may reflect minimal research using traditional archaeological techniques to evaluate relationships between Rock Art, human activities, and specific environments. These parameters have been incorporated into a multidimensional model based on research conducted in southern Oregon. The Tired Dam locality contains rock art and other archaeological evidence, and was excavated to evaluate model predictions. Findings suggest that site utilization was not related to shamanic practices, but rather to everyday subsistence activities.

Wren, Linnea H. (Gustavus Adolphus) and *Lynn Foster*

[114] **Ritual Dance at Chichen Itza: Cultural Continuity and Innovation in the Northern Maya Lowlands**

This paper will examine the representation of dance rituals at the northern lowland site of Chichen Itza. It will be argued that the dance was an important means for cultural preservation of traditional cosmological beliefs. At the same time, it will be proposed that the dance was also a crucial area for cultural experimentation. This experimentation included the roles of women, the methods of military organization, and the patterns of rulership. Finally, this paper will suggest that the sculptural representations of the dance, including those of the North Temple, Mercado and Lower Temple of the Jaguar, served as visual templates for the abstract concepts of polity and cosmology on which Chichen Itza was based.

Wright, Henry T. (Michigan) and *Donald B. Simons* (Michigan Archaeological Society)

[36] **Colonizing the Central Great Lakes: Implications of Gainey and Butler Assemblage Variability**

In the heart of the central Great Lakes region, a detailed fluted point survey and the excavation of two large sites—the Gainey and Butler sites—dated between 11,000 B.P. and 10,500 B.P. ¹⁴C—are approaching completion. Data on chronology, raw materials, stone tool variability, within-site distributions, and regional distributions can be used to discuss adaptive contexts, technological organization, territoriality, seasonal mobility, and intraregional exchange. We will conclude by outlining current studies contributing to a better understanding of such basic areas as dating, exploited prey, and activity organization.

Wright, Herbert (Minnesota)

[109] **The Climatic Setting for Plant Domestication in the Near East**

Pollen studies from Spain to Turkey and Iran indicate that the landscape changed from steppe to woodland about 11,000 years ago, as the Westerlies returned to the north following ice-sheet retreat and as the Subtropical High Pressure Belt expanded, bringing the summer droughts that favored the expansion of annual plants such as wild cereal grains. Ground disturbance near Natufian settlements may have provided the habitats particularly favorable for annual plants, and their domestication could follow. A Younger Dryas climatic reversal is not necessary to explain the cultural change, and pollen evidence for it in the Near East is weak.

Wright, Lori E. (McMaster): [68] (*see Burton, James*)

Wright, Melanie F. (California-Berkeley)

[11] **Reading Social Difference with Paleoethnobotanical Eyes: The Case of Middle Horizon Tiwanaku**

Plants figure prominently in the economic, domestic, religious and symbolic life of Andean cultures; their study is key to understanding past cultural dynamics. This talk presents paleoethnobotanical analyses of plant remains from excavations at Tiwanaku, Bolivia. By studying the ways plants are selected, processed, prepared and disposed of, and the differences in these processes among different sectors of the site (ritual contexts, "palaces," domestic structures of varying status) across the critical

period spanning the expansion and consolidation of the Tiwanaku polity, we can gain insight into the maintenance and negotiation of social difference and social control in this early state.

Wright, Rita (New York)

[124] **Knowledge and Choice, Cultural and Practical Reasons**

The emphasis on social agency and cultural logic in studies of technology represents a welcome change from the systems centered, adaptive approach. There are numerous convincing arguments from both ancient and modern examples that leave little doubt that technology is a social construction. But social constructions have their practical side and there may be disjunctions between cultural reasons and practical ones, since cultures are made up of heterogeneous groups. Therefore, the question of whose interests technologies serve should not be neglected. The technology of water related structures at urban Harappan sites is discussed in this context.

Wurst, LouAnn (Syracuse)

[113] **A Method for Our Madness? Method and Theory in Radical Archaeology**

Disillusionment with positivist science has led many archaeologists to the ideas of radical theory. Some have argued that the goals of radical archaeology are stymied by the lack of explicit archeological method. This implies that there is plenty of radical theory, but no way to implement it. I will argue that we conceive of method and theory in terms of a false dichotomy, and that this structures the way we approach the discipline. Archaeology actually encompasses the production of very different kinds of knowledge, both describing and explaining, each of which involve fundamentally different "methods."

Xingiang, Si (Cultural Relics Management Committee, Guizhou Province, China): [119] (see *Müller-Antonio, Sari*)

Yaeger, Jason (Pennsylvania) and **Lisa LeCount** (California-Los Angeles)

[64] **Social Heterogeneity and Political Integration in a Terminal Classic Maya Community: Ongoing Research at San Lorenzo, Belize**

Survey and excavation at San Lorenzo, an outlier community of Xunantunich, demonstrate the vitality of the Terminal Classic population of the upper Belize valley. Variation between domestic groups in both mound size and layout indicates a heterogeneous community. Likewise, differences in the presence and curation of exotic goods, as well as distinct architectural styles, suggest household-level inequalities in both wealth and social links to Xunantunich, the regional political and ritual center. In a more detailed examination of the distribution of ceramic styles and forms, the authors discuss ritual ties to Xunantunich that may have contributed to local political integration.

Yarborough, Linda Finn (Wisconsin-Madison)

[100] **Prehistoric Use of Rockshelters in Prince William Sound, Alaska**

Prince William Sound is one of only a few known locales in Alaska where rockshelters and caves contain evidence of past cultural activities. Their use for deposition of mummified human remains in early historic times has been recognized by archaeologists since the nineteenth century. A test excavation in 1933 in one rockshelter indicated that it had been inhabited during prehistoric times, but no further investigations at such sites were accomplished until 1993 and 1994. Preliminary results from this recent work provides new insights into the place of rockshelters in prehistoric settlement and subsistence patterns in the Alutiiq region.

Yeatts, Dale J. (Stanford): [32] (see *Blom, Deborah E.*)

Yeatts, Michael: [42] (see *Dongoske, Kurt*)

Yerkes, Richard W. (Ohio State), **Michael K. Toumazou** (Davidson), and **P. Nick Kardulias** (Kenyon)

[31] **Survey and Excavation in Central Cyprus, the Athienou Archaeological Project 1994**

1994 investigations at Athienou-Malloura Cyprus included remote sensing and balloon photography at the Archaic-Ottoman site. Excavations focused on a Venetian industrial structure, Archaic-Hellenistic Sanctuary, and Hellenistic-Roman rock-cut tomb. Survey recorded 30 sites ranging from Neolithic/Chalcolithic lithic scatters to recent mud-brick villages. Site location and cultural/environmental data are being entered into a GIS data base. Settlement analyses reveal visits to chert sources 5000-8000 B.P., followed by sanctuary and tomb building 2500 years later, with the establishment of nucleated settlements during Roman times (1700 B.P.) that continue through the Ottoman period.

Yesner, David R. (Alaska-Anchorage)

[116] **Paleoindian Dietary Breadth in Interior Alaska: Evidence from the Broken Mammoth Site**

Until recently, a "Big Game Hunter" model has been applied to Alaskan Paleoindians, in the absence of zooarchaeological data. This model is based on a full-glacial tundra-steppe environment supporting megafaunal herds. However, recent zooarchaeological data from the Broken Mammoth site challenge the model, and provide evidence that the earliest populations had a diverse diet, including large and small mammals, birds and fish. This broad spectrum diet arose in response to environmental conditions of the "Birch Period," including the replacement of tundra-steppe by open parkland, the local extinction of mammoth and horse, the development of stable seasonal wetlands, and the establishment of the North Pacific flyway.

[100] (see *Mack, Robert*)

Yokell, Carol A. (Illinois-Urbana/Champaign)

[120] **Some Effects of Special Purpose Sites on the Faunal Composition in Habitation Sites: An Example from Fort Ancient**

An analysis of faunal remains recovered from recent (since 1982) excavations at Fort Ancient in southwestern Ohio indicates a possible year-round occupation, counter to current views concerning Middle Woodland settlement and subsistence strategies. A faunal assemblage collected from this site during the early 1900s shares obvious similarities in composition and modification with ceremonial sites possessing adjacent habitation zones (e.g., Elizabeth Mounds and Napoleon Hollow in Ohio). This earlier assemblage from Fort Ancient, not previously examined, provided an opportunity to conduct a parallel analysis and evaluate recent findings. The results suggest that differences in faunal composition and seasonality of occupation between this and other Middle Woodland habitation sites are due, at least in part, to the proximity to a special purpose site (the earthworks themselves).

Young, D. Craig (Nevada-Reno)

[121] **Landscape Change and Archaeology in Warner Valley, Oregon**

The prehistoric landscape and archaeological record of Warner Valley, Oregon, has been subject to varying rates of geomorphic process. Landscape alteration has occurred at three distinct rates over the final regression of pluvial Lake Warner/Coleman. The initial, high rates of landscape change produced the geographic character of the present lake/marsh system; later processes have continued to alter that landscape. Early archaeological contexts may have been subject to significant alteration while later contexts have good potential for being intact. Recognition of geomorphic processes is important for understanding the character and potential of the local archaeological record.

Young, Phillip A. (National Park Service-Resources Protection Unit)

[29] **Money, Drugs, and Art**

Mexico has some of the strongest cultural resource protection laws in the world. Despite signing the UNESCO treaty over twenty years ago, recent investigations indicate that Mexico remains the epicenter of looting driven by collector interest in Precolumbian artifacts and market values abroad. Archaeological zones are experiencing reduced looting activity because decades of deplorable wholesale removal of material cultural has "left nothing to loot". Authorities continue to put enforcement efforts toward drugs, money, laundering, and weapons, over looting and trade. Can/Should that be turned around?

[122] Discussant

Zaibert, Victor (Petropavlovsk Pedagogical Institute, Kazakhstan): [77] (see *Olsen, Sandra E.*)

Zalucha, L. Anthony

[33] **Floral Resource Selection and Depositional Patterning at the Wever Site (13LE110)**

Analysis of floral material has been completed from the first year's excavation at the Wever site (13LE110), a 700-year-old Oneota village near Burlington, Iowa. Statistical analysis of pollen from 40 features shows numerous two-way associations of taxa and two three-way associations significant at the .05 level. These suggest the consistent selection of specific floral taxa. Two varieties of corn were grown, one 8-rowed, one 12-rowed. Statistical analysis also indicates the presence of a third variety. Maygrass, present in nearby Woodland contexts, disappeared from the Oneota suite of native cultigens.

Zeder, Melinda A. (Smithsonian Institution): [109] (see *Cleghorn, Naomi E.*)

Zeidler, James A. (Illinois-Urbana/Champaign): [127] (see *Stahl, Peter W.*)

Zeidler, James A. (Illinois/US Army, CERL) and *Harry Miller* (US Army, CERL)

[72] **ProbeCorder: Pen-Based Computing for Field Recovery of Subsurface Testing Data**

Systematic subsurface testing procedures are an increasingly necessary solution to the dual problems of finding and assessing deeply buried or otherwise obscured archaeological sites, yet they are extremely labor intensive and costly. ProbeCorder is a pen-based computer module designed to maximize the logistical efficiency of subsurface testing by automating the routine collection, integration, and storage of probe data in the field. It operates within commercially available data collection software having GIS/GPS display capability. Five basic dialogue boxes are employed to record locational references, sediment profiles, and artifact/feature content of each probe within a user-defined survey unit and sampling geometry.

Zhao, Zhijun (Missouri), *Deborah M. Pearsall* (Missouri), and *Richard S. MacNeish* (Andover Foundation for Archaeological Research)

[131] **Phytolith Evidence for Early Rice in Southern China**

Phytoliths have the potential for providing significant archaeological information. Recent research at the MU Lab has indicated that *Oryza* contributes phytolith types that are genus-specific. One type can be used to distinguish between domestic rice and wild rice species. This study reports on the occurrence of phytoliths relevant to the presence of rice in soil samples collected from three early Neolithic sites in middle Yangtze River area, southern China, which are the Xianrendong site, the Wangdong site, and the Pengtoushan site. The results of this phytolith study are very encouraging for studying the origin of rice, as many archaeological sites in Southern Asia have poor preservation of other botanical materials.

Zilhão, João (Faculdade de Letras de Lisboa)

[117] **The Transition to Agriculture in the Iberian Peninsula**

In Mediterranean Spain and South Central Portugal the transition to agriculture is signaled by the appearance in the archaeological record of new items of material culture (pottery, polished stone axes, bone tools) associated with domesticates (cereal and ovicaprids). At the resolution provided by the radiocarbon timescale, this is a punctuated process, beginning around 6800 B.P. in the whole region and related to the establishment of agricultural colonies in areas marginally used by hunter-gatherers. In Cantabrian Spain, the transition begins ca. 1,000 radiocarbon years later and is probably related with an adoption of the new economic system by the local populations.

Zoubek, Tom (Yale)

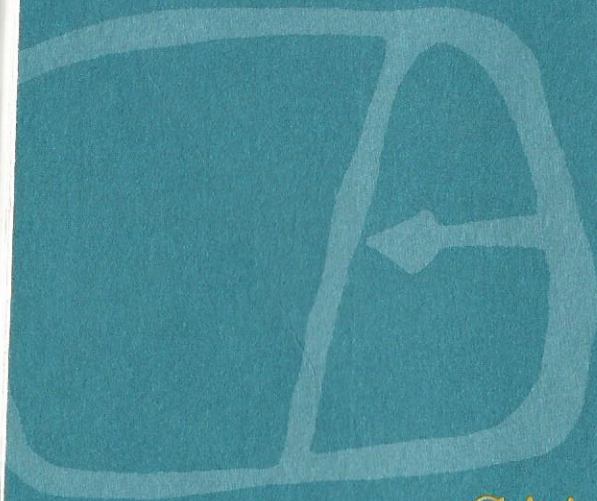
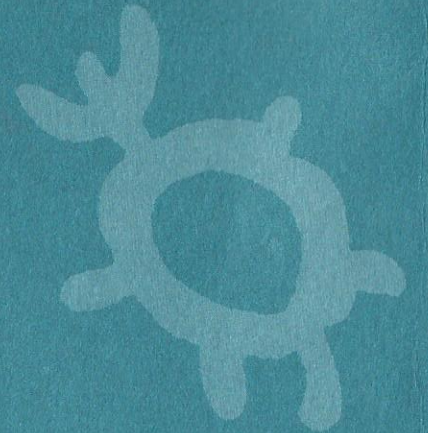
[90] **Results of the First Field Season at the Formative Site of Huaca El Gallo/Huaca La Gallina, Virú Valley, Peru.**

The objectives of the first field season at Huaca El Gallo/Huaca La Gallina, Virú Valley, Peru were to: 1) Generate a map which both delimited the site and recorded all surviving architectural features. 2) Date the site by use of stratigraphy, ceramics and radio carbon. 3) Excavate domestic structures and burials. 4) Investigate nonmonumental structures of possible ceremonial function. While absolute dates are still lacking the Formative nature of the occupation has been established by both ceramic information and artifactual evidence, including the recovery of a Formative monolith comparable to that of Pampa de las Llamas-Moxeke in Casma.

Zvelebil, Marek (University of Sheffield)

[117] **The Transition to Agriculture in Eastern Europe**

This contribution outlines the process of the transition to agriculture in eastern Europe (an area roughly within the European borders of the former Soviet Union). Geographically, emphasis will be placed on the adoption of agriculture in the Ukraine and the East Baltic countries; topically, the transition is viewed as a process of interaction between the immigrant farming communities or communities which have recently adopted farming (depending on the region) and the hunter-gatherers, occurring in a structured context of the agricultural frontier. The ambiguity of material culture, and the importance of historical contingency and of anthropological models are stressed.



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