54th ANNUAL MEETING
SOCIETY FOR AMERICAN ARCHAEOLOGY

PROGRAM AND ABSTRACTS

ATLANTA HILTON
April 5-9, 1989
PROGRAM AND ABSTRACTS
of the Fifty-Fourth Annual Meeting
Atlanta, Georgia
April 5–9, 1989

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For information, sample analyses, and price quotes, call 608-437-4792 or write 109 Sunset Lane, Mt. Horeb, Wisconsin 53572

Illustration: Stone totem carved by Haida Indians of Queen Charlotte Island, British Columbia rendered in watercolor in 1870's by James Swan and now part of the Smithsonian's Anthropological Archives.
The annual meeting of the Society for American Archaeology provides a forum for the dissemination of knowledge and discussion. The views expressed at the sessions are solely those of the speakers and the Society does not endorse, approve, or censor them. Descriptions of events and titles are those of the organizers, not the Society.

Cover: Late prehistoric incised jar. Creighton Island, GA. After C. B. Moore, Georgia Coast Mounds, 1897.

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GENERAL INFORMATION

Abstracts  Abstracts of papers presented at this meeting are included in the Program. Additional copies are available for $5 per copy and may be ordered prepaid from the Society, 808-17th Street N.W., Washington, D.C. 20006.

Business Meeting  The Society's annual business meeting will begin at 5:30 PM on Friday in the Grand Salon West.

Convention Office  Any problems or special requests during the meeting should be reported to the Convention Office in the George Washington Room.

Exhibits  Exhibits will be displayed in the Walton/Cheerokee/Henry Rooms from 9 AM to 6 PM on Thursday and Friday, and 9 AM to 2 PM on Saturday.

Membership Services and Publications  SAA publications will be displayed and membership information will be available in the exhibit room during the exhibit hours.

Message and Information Center  A self-service message center will be open in the second floor lobby from 5 PM to 8 PM Wednesday, and from 8 AM to 5 PM Thursday through Saturday.

New Member Reception  Officers of the Society will host a reception for students, new members and members attending their first annual meeting on Wednesday at 8 PM in Crystal Ballroom E & F.

Placement Service  A placement service will be conducted in Room 452 from 5 PM to 8 PM on Wednesday, from 8 AM to 5 PM Thursday and Friday, and from 8 AM to noon on Saturday. Positions open or wanted may be listed with the service throughout the meeting. Message forms will be provided and box numbers will be assigned for use in the placement service message center.

Registration  Registration, which includes a copy of the Program and Abstracts, is required for attendance at all sessions. Registration desks will be open from 5 PM to 8 PM on Wednesday, from 7:30 AM to 3 PM on Thursday, 8 AM to 3 PM on Friday and from 8 AM to noon on Saturday. Members who preregistered by March 13 should claim their badges and programs at the advance registration desk. Wearing of the badge is required for admission to all sessions and the exhibits.

Symposia and Sessions Chairs  Please maintain the established schedule scrupulously in fairness to persons planning to attend sessions at specific times to hear particular speakers; please pause for the period allotted in the program if a scheduled speaker fails to appear.

Session Smoking Ban  Smoking during sessions will not be permitted.

Slide Screening Room  A 35mm slide projector and screen will be available in Room 438 from Wednesday at 6 PM and thereafter throughout the meeting for presenters who wish to check their slides before presentation.

ANNUAL MEETINGS OF THE SOCIETY FOR AMERICAN ARCHAEOLOGY

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AWARDS TO ARCHEOLOGISTS
Compiled by N Woodbury

The Viking Fund Annual Awards in Anthropology [provided by the Wenner-Gren Foundation] consisted of three Viking Fund Medals, with accompanying Viking Fund Prizes of $1,000 each. These were awarded annually 1946–60 for distinguished research, publication, and contribution to science. Scholars were selected by committees of their respective societies—in archaeology by the Society for American Archaeology, in general anthropology by the American Anthropological Association and in physical anthropology by the American Association of Physical Anthropologists.

The awardees in archaeology are:

1946 Alfred Vincent Kidder
1947 John Oris Brew
1948 Alex Dony Krieger
1949 Hallam Leonard Movius, Jr.
1950 Emil Walter Haury
1951 Frank Harold Hanna Roberts, Jr.
1952 Alfonso Caso
1953 Gordon Randolph Willey
1954 William Duncan Strong
1955 John Eric Sidney Thompson
1956 Junius Bouton Bird
1957 James Bennett Griffin
1958 Jesse David Jennings
1959 Irving Rouse
1960 Samuel Kirkland Lothrop

The Alfred Vincent Kidder Award, a bronze medallion bearing the likeness of Kidder, was established in 1950 as a tribute to the leadership of A V Kidder by the American Anthropological Association. It has been awarded every three years for eminence in American archaeology, particularly in those fields in which Kidder contributed so much, the Southwestern United States and Middle America.

The awardees have been:

1950 Alfred Marston Tozzer
1953 Earl Halstead Morris
1956 Samuel Kirkland Lothrop
1959 Charles Corradino Di Peso
1962 Tatiana Proskouriakoff
1965 Neil Merton Judd
1968 Paul Sidney Martin
1971 Richard Stockton MacNeish
1974 Gordon Randolph Willey
1977 Emil Walter Haury

1980 William Timothy Sanders
1983 Samuel Watson Smith
1986 Ignacio Bernal

The Distinguished Service Award of the Society for American Archaeology was established in 1975. In 1980 it was decided to make the award annually. It consists of a framed inscribed citation.

The awardees have been:

1975 Carl Haley Chapman
Charles Robert Mcgimsey III
1980 Gordon Randolph Willey
1981 Albert Clanton Spaulding
1982 Jesse David Jennings
1983 Hannah Marie Wormington
1984 James Bennett Griffin
1985 Emil Walter Haury
1986 Waldo R Wedel
1987 William A Ritchie
1988 Richard B Woodbury and Nathalie F S Woodbury

The Fryxell Award for Interdisciplinary Research was set up by the Society for American Archaeology in 1977 in memory of Roald Fryxell whose career exemplified so well the crucial role of interdisciplinary cooperation in archaeology. The award, consisting of a citation and a medallion, was to be presented annually; however, no award was made in 1984.

The awardees have been:

1978 C Vance Haynes
1979 Peter J Mchiringer
1980 James B Griffin
1981 Karl W Butzer
1982 David A Barreis
1983 John E Guilday (posthumously)
1984 [No Award]
1985 Roger T Saucier
1986 Donald K Grayson
1987 Richard I Ford
1988 David M. Hopkins

The Crabtree Award was established by the Society for American Archaeology in 1985 to recognize major contributions to American archaeology by individuals who have had little if any formal training in archaeology and little if any wage or salary as an archaeologist. The award is named after Don Crabtree of Twin Falls, Idaho, who made significant contributions to the study of lithic technology and whose dedication to archaeology was a lifelong personal and financial commitment.

The awards have been:

1985 Clarence H. Webb, MD
1987 Leonard W Blake
1988 Julian Dodge Hayden
### BUSINESS & SOCIAL EVENTS

#### MONDAY, APRIL 3
- 9:00 AM  NSF Archaeology Panel—Room 438

#### TUESDAY, APRIL 4
- 8:00 AM  US Forest Service—State Room
- 9:00 AM  Soil Conservation Service—Club Room
- 9:00 AM  NSF Archaeology Panel—Room 438

#### WEDNESDAY, APRIL 5
- 8:00 AM  SAA Executive Committee—Embassy Room
- 8:00 AM  SAA Government Affairs Committee—Fayette Room
- 8:00 AM  Army Corps of Engineers—Club Room
- 8:00 AM  US Forest Service—State Room
- 8:00 AM  Association of Transportation Archeologists—Council Room
- 8:00 AM  American Society for Conservation Archaeology—Board/Directors Room
- 9:00 AM  National Association of State Archeologists—Cabinet Room
- 9:00 AM  Soil Conservation Service—Room 436
- 2:00 PM  Volunteer Workers Meeting—Fayette Room
- 5:00 PM  SAA Anti-Looting Committee—Thomas Jefferson Room
- 7:00 PM  DOD Meeting—Club Room
- 8:00 PM  Student and New Member Reception—Crystal Ballroom E & F

#### THURSDAY, APRIL 6
- 8:00 AM  SAA Committee on Public Archaeology—State Room
- 8:00 AM  Archeology Unit of the American Anthropological Association—Cabinet Room
- 8:00 AM  SAA Finance Committee—Council Room
- 9:00 AM  Society of Professional Archeologists—Executive Committee Meeting—Club Room
- 11:30 AM  Council of Presidents Luncheon (By invitation only)—John Adams Room
- 12 Noon  Society of Professional Archeologists—Business Committee Meeting—Club Room
- 12 Noon  Society for Archaeological Sciences—Council Room
- 12 Noon  American Society for Conservation Archaeology—Annual Business Meeting—State Room
- 1:00 PM  Society of Professional Archeologists—Executive Committee Meeting—Club Room
- 2:00 PM  Council of Affiliated Societies—leaders of State and local archaeological societies are invited to an open discussion of the proposed formation of a Council of Affiliated Societies—Room 436
- 2:00 PM  American Society for Conservation Archaeology—Executive Committee Meeting—State Room

#### FRIDAY, APRIL 7
- 5:00 PM  Society for Archaeological Sciences—Business Meeting—Cabinet Room
- 5:30 PM  Reception—Cash Bar—Grand Ballroom West

#### SATURDAY, APRIL 8
- 8:00 AM  SAA Executive Committee Meeting—Embassy Room
- 8:00 AM  International Radiocarbon Data Base—Room 436
- 8:00 PM  Women in Archaeology: Reception. Cash Bar—Douglas Room
- 9:00 PM  Dance Concert—International Rooms
THURSDAY MORNING APRIL 6, 1989

[0] Poster Session: CURRENT ARCHAEOLOGICAL RESEARCH ON DISPLAY

PREFUNCTION WEST

Participants
Nancy Malville, Human Modification of Skeletal Material from Two Mass Burials at Yellow Jacket, Southwestern Colorado
G. Lain Ellis and Michael R. Waters, The Geoarchaeology of Place: An Example from the Tucson Basin, Arizona
Marie A. Usner and Patricia A. Urban, Differential Distributions of Design Elements of Late Classic Painted and Incised Pottery from the Naco Valley, Northwestern Honduras
Sonya Kane and Patricia A. Urban, Form and Structure at a Terminal Postclassic Site in Northwestern Honduras

Suzanne Fish, Paul R. Fish, Curtiss Brennan and John Madsen, Integration and Structure of a Nonriverine Hobokam Classic Period Community

John Weymouth, Why Not Use a Gradiometer?: On the Use of Magnetic Survey Data Obtained at Two Sensor Heights

James Sheehy, Statistical Correspondence between Ceramic Wasters and Total Ceramic Production in a Contemporary Pottery Workshop in Teotihuacan, Mexico

Jane Stone, Laurie J. Reinhart, J. Dembigh Starkey and Ray S. Babcock, Computerized Three-Dimensional Modeling of Stratigraphy: Advantages, Pitfalls, and Data Requirements

Frank W. Eddy and Dale Lightfoot, Remote Sensing of Glaze Period Towns in the Galisteo Basin, Northern New Mexico


GRAND SALON E
Organizer: David Hurst Thomas
Organizer and Chairperson: Jeffrey M. Mitchem

Participants
7:40 Ann Ramenofsky, Loss of Innocence: Assessing Archaeological Explanations of Aboriginal Change in the Sixteenth-Century Southeast
8:00 Jeffrey M. Mitchem, Initial Spanish/Indian Contact in West Peninsular Florida: The Archaeological Evidence
8:20 Dale L. Hutchinson, Postcontact Biocultural Change: Mortuary Site Evidence
8:40 Rochelle A. Marrinan, John F. Scarry and Rhonda L. Majors, Prelude to De Soto: The Panfilo De Narvaez Expedition
9:00 Charles Ewen, Soldier of Fortune: Hernando de Soto in the Territory of the Apalachee, 1539-1540
9:20 John F. Scarry, Beyond Apalachee Province: Assessing the Evidence for Early European-Indian Contact in Northwest Florida
9:40 David J. Levy, Marvin T. Smith and James B. Langford, Jr., The Archaeological Reality of de Soto's Coosa
10:00 James B. Langford, Jr., The Coosawattee Plate: A Catholic/Aztec Artifact from Northwest Georgia
10:20 Charles Hudson, John Worth and Chester DePratte, Refinements in De Soto's Route Through Georgia and South Carolina
10:40 Janet E. Levy, J. Alan May and David G. Moore, From Ysa to Joara: Cultural Diversity in the 15th and 16th Century Catawba Valley
11:00 Caleb Curren and Keith J. Little, Conquest Archaeology of the Alabama Coastal Plain
11:20 David Dye, Warfare in the Sixteenth Century Southeast: The De Soto Expedition in the Interior
11:40 Dan F. Morse and Phyllis A. Morse, The Spanish Discovery and Exploration of "Akansea"
Thursday Morning, April 6

[2] Symposium: MIDDLE PALEOLITHIC ADAPTATIONS IN EURASIA: REGIONAL PERSPECTIVES

ROCKDALE-FORSYTH
Organizers and Chairpersons: Harold L. Dibble and Paul A. Mellars

Participants
8:30 Gerhard Boessneck, Middle Paleolithic Settlement Patterns in Western Germany
8:50 V. Cabrera Valdez and F. Bernaldo de Quiros, Approaches to the Middle Paleolithic in Northern Spain
9:10 Andre Debenath, The Place of the Mousterian from Charente in the Middle Paleolithic of Southwest France
9:30 L. G. Freeman, Mousterian Facies: Implications of Morin Level 16
9:50 Donald G. Henry, Transhumance During the Late Levantine Mousterian
10:10 Henri Laville, Recent Developments in the Stratigraphy and Palaeoenvironmental Context of Middle Paleolithic Occupations in the Circum-Mediterranean
10:50 Paul A. Mellars, Industrial Variability in the Southwest French Mousterian: New Perspectives on an Old Debate
11:10 Alain Tuffreau, Middle Paleolithic Settlement in Northern France


VIENNA-STRASBOURG
Organizer and Chairperson: Joyce C. White

Participants
8:30 Geoffrey G. Pope, The Lower Paleolithic of Southeast Asia: Toward the Development of Bio-Cultural Models
8:50 Joyce C. White, Settlement Patterns of Ban Chiang Tradition Sites in Relation to Natural Resources: An Ethnological Contribution
9:10 James S. Penny, Jr., Cultural Development in Mainland Southeast Asia: Models and Data
9:30 William Glanzman, Joyce C. White and Ann Rufo, Potting Traditions and Their Role in Interpreting Regionalism in Northeast Thailand: The Evidence from Ban Chiang
9:50 Roberto Clarza, Andrew D. Weiss and Mauro Cremaschi, Development of Social Complexity in Central Thailand: Community Growth and Change at Ban Kaan
10:10 Vincent Pigott, Investigating the Origins of Metal Use in Prehistoric Thailand
10:30 Robert E. Murowchick, From the Ground Up: Ore Distribution and Subregional Variability in the Bronze Age of Southwest China
10:50 P. Bion Griffin, Rethinking Philippine Prehistory
11:10 Eusebio Z. Dizon, Is There an Iron Age in the Philippines?
11:30 Discussant: Michael W. Graves


NORTH WING EAST
Organizers and Chairpersons: Anabel Ford and Patricia McAnany

Participants
8:00 William R. Fowler, Household Differentiation and the Production of Wealth: The Case of 16th-Century Itzalco, El Salvador
8:20 Janine Gasco, Documentary and Archaeological Evidence for Household Differentiation in Colonial Socoluenos, New Spain
8:40 Muriel Alejandro Martinez, Late Formative Household Middens at Don Martin, Chiapas, Mexico
9:00 Barbara A. Hall and Barbara L. Stark, Ceramics and Social Differentiation Amongst Prehistoric Households in La Mixtequilla, Veracruz, Mexico
9:20 Thomas W. Kilborn, Household Differentiation at Middle Classic Matalcan
9:40 Phillip I. Arnold, The Implications of Spatial Availability for Houselot Refuse Disposal in the Tuxtla


NORTH WING WEST
Organizers and Chairpersons: Robert F. Maslowski and Mark F. Seeman

Participants
8:20 Robert F. Maslowski and Mark F. Seeman, Woodland Archaeology in the Mid-Ohio Valley: Setting Parameters for Ohio Main Stem and Tributary Comparisons
8:40 R. Berle Clay, Changing Adena Mortuary Practices
9:00 Elliot Abrams, Early Woodland Settlement Patterns in the Hocking Valley, Ohio
9:20 Charles M. Niquette, Early/Middle Woodland Settlement Patterns in the Ohio Valley
9:40 Steven R. Ahler, The Hansen Site (15CP14): A Middle/Late Woodland Site Near the Confluence of the Ohio and Scioto Rivers
10:00 William S. Daney, Village Origins in Central Ohio: The Results and Implications of Recent Middle and Late Woodland Research
10:20 Richard W. Jeffries and Michael J. Short, Late Woodland Economy and Settlement in the Mid-Ohio Valley: Recent Results from the Children/Woods Project
10:40 Mark F. Seeman, The Intrusive Mound Culture of Southern Ohio and the Bow and Arrow Problem
11:00 Dee Ann Wymer, Trends and Disparities: The Woodland Paleoethnobotanical Record of the Mid-Ohio Valley
11:20 Discussants: Patrick J. Munson and James A. Brown


FAVETTE-NEWTON
Organizer and Chairperson: Mark S. Aldenderfer

Participants
9:00 Mark S. Aldenderfer, Archaic Period Domestic Architecture from the Osmore Basin
9:20 Paul Goldstein, Town Plan and Domestic Function in a Tiwanaku Provincial Center: The Case from Omo, Southern Peru
9:40 Don S. Rice, Domestic Architecture and Site Structure at El Yaral, Southern Peru
10:00 Charles Stanish, Domestic Architecture at Pukara Jullfa: A Late Period Site in the Titicaca Basin
10:40 Karen Wise, Late Intermediate Period Domestic Architecture of Lukurmata
11:00 Prudence R. Rice, Peter Bursi, Mary van Buren and Geoffrey W. Conrad, Torata Alta, an Inka-Spanish Settlement
11:20 Discussants: Michael Moseley and Mario A. Rivera


LISBON
Organizer and Chairperson: Cheryl Claassen

Participants
8:00 Julie K. Stein, What Makes a Shell Midden?
8:20 Kim Kornbacher, A Methodological Stride in Shell Midden Archaeology
8:40 Jon M. Erlandson, On Reconstructing Diets from California Shell Middens
Thursday Afternoon, April 6

9:00 Barbara Voorhies and George H. Michaels, Periodicity in the Formation Processes of the Shell Middens of the Coastal Chapas Archipelago
9:20 Joseph Mouton, Macro and Micro Screen Sampling of a Middle Formative Shell Midden at San Blas, Nayarit (Mexico)
9:40 David Sanger, Where Did the Indians Go? Seasonality Issues on the Maine Coast
10:00 Francis P. McManamon, The Spatial Diversity of Remains in Prehistoric Shell Middens
10:20 Alan May, Archaeological Shell Middens: Field Experience with Site Formation Models
10:40 Randolph Widmer, Archaeological Research Strategies in the Investigation of Shell-Bearing Sites, a Florida Perspective
11:00 Nancy Marie White, Testing Remote Shell Middens in the Apalachicola Valley Estuary, Northwest Florida
11:20 Cheryl Claassen, The Interpretive Crisis in Shell Midden Archaeology

[8] General Session: ETHNOARCHAEOLOGY
DUSSELDORF
Chairperson: Jean Hudson
Participants
8:30 Steve A. Tomka, The Ethnoarchaeology of Site Abandonment in an Agro-Pastoral Context
8:50 Raymond Mauldin and Steve A. Tomka, An Ethnoarchaeological Assessment of Grinding Efficiency and Ground Stone Size
9:10 Tom D. Dillehay, Use and Discard of Utilitarian and Non-Utilitarian Goods in Large Scale Public Ceremonies: An Ethnoarchaeological Perspective from the Mapuche of Chile
9:30 Robert J. Hard and William Merrill, Mobility and Sedentism Among the Tarahumara
9:50 John Fisher, Jr., Links in the Lives of Hunter-Gatherers: Archaeological Implications Among the Mbuti
10:10 Daniel Amick, Assemblage and Feature Diversity Among the Kung: Implications for Archaeological Studies of Forager Settlement Systems
10:30 Susan Kent, Demography of Newly Sedentary Foragers and Implications for Archaeology
10:50 Steven Brads, An Ethnoarchaeological Study of Farmer, Pastoral and Hunter Pottery Use and Mobility Patterns in Southern Somalia
11:10 Massimo Vidale, The Identity of Craft Production in Early Urban Societies and the Culturally Specific Definition of Public Space

THURSDAY AFTERNOON APRIL 6, 1989

[9] Symposium: EUROPE IN THE FOURTH MILLENNIUM
MILAN
Organizer: Haskel Greenfield
Chairperson: Susan A. Greg
Participants
1:00 Alexandra Kalogirou, The Fourth Millennium in the Aegean
1:20 Haskel Greenfield, The Socio-Economic Transformation of Southeastern Europe in the Fourth Millennium
1:40 Susan A. Greg, The "Secondary Colonization" of Europe: The Alpine Foreland in the Fourth Millennium
2:00 Peter Bogucki, The Neolithic Mosaic on the North European Plain, 4,000-3,000 B.C.
2:20 David Anthony, From Ethnicity to Ecology: The Transformation of Boundaries in the Copper Age of the Southwestern USSR
3:10 Juan Vicent-Garcia, Social and Economic Change in Fourth Millennium Iberia
3:30 Stanton Green and Marek Zvezdelnicek, Farming an Island: The Development of Agricultural Society in Prehistoric Ireland
3:50 Peter Rowley-Conwy, The Danish-South Swedish Coastal Region in the Fourth Millennium B.C.
4:10 Michael Hecht, Forager-Farmer Interaction in the Neolithic of Northern France

LISBON
Organizer and Chairperson: Carla M. Sinopoli
Participants
1:00 William A. McCord, The Emergence of Long Distance Stone Procurement Systems in Stone Age India
1:20 Gurcharan Khanna, Lithic Procurement and Mobility in the Mesolithic of Rajasthan
1:40 George F. Dales, The Harappa Project and the Question of Early States
2:00 J. Mark Kenoyer, Harappan Craft Specialization and the Question of Urban Segregation and Stratification
2:20 Gregory L. Possehl, Regionalism and the Harappan Civilization
2:40 Louis Flam, The Sind Archaeological Project: The Kirthar Surveys and Ghazni Shah Excavations
3:00 Steven Weber, Accounting for Variability in the Temporal and Spatial Distribution and Occurrence of Plant Remains in South Asia Sites During the Second and Third Millennium B.C.
3:20 Jim G. Shaffer, The Early South Asian State: A Non-Traditional Model
3:40 Kathleen Morrison, Urban Agricultural Production in South India
4:00 John M. Fritz, Imperial Style and Symbolism of Power: A South Indian Example
4:20 Carla M. Sinopoli, The Political Economy of a South Indian Empire
4:40 Discussants: Jeffrey B. Parsons

NORTH WING WEST
Organizers: Arthur Demarest and Stephen Houston
Chairperson: Don S. Rice
Participants
1:00 Robert Sharer, Preclassic Foundations of Classic Maya Political Systems
1:20 Arthur Demarest and Stephen Houston, The Dynamism and Heterogeneity of Ancient Maya States
1:40 Richard E.W. Adams, Classic Maya Political Units as Viewed from Rio Azul
2:00 William Fash, Jr., Politics, Patronage and Polity in the Evolution of Dynastic Power at Copan, Honduras
2:20 Juan Pedro Laporte and Vilma Fialko, Specific Architectural Complexes and Territorial Definition in the Central Maya Lowlands
2:40 David Stuart, Thoughts on Territorial Organization Within Classic Maya States
3:00 Joseph W. Ball and Jennifer T. Taschek, Small Site Archaeology and Classic Political Organization: The Mopan-Macal Triangle Project
3:20 Richard M. Leventhal and Peter S. Dunham, A Regional Model of Political Organization in the Maya Lowlands: An Example from Southern Belize
3:40 George J. Rey III and William M. Ringle, The Processes of Political Integration: The Case of Ek Balam, Yucatan
4:00 Nicholas Dunning, The Geography of Power in the Terminal Classic, Northern Puuc, Mexico
4:20 David Freidel and Linda Schele, Tlacolulco War and the Triumph of the Confederacy at Chichen Itza
4:40 Discussants: Norman Hammond and David L. Webster

VIENNA-STRASBOURG
Chairperson: Alan Sullivan
Participants
1:00 Shirley Powell, Archaeological Survey Data: How Consistent Are We in Recording Them?
1:20 Thomas Roce, Sample Size and Seasonality: Comparisons of Artifact Assemblage Composition
Thursday Afternoon, April 6

[16] Symposium: THE ARCHAEOLOGY OF GARDEN AND FIELD
FAYETTE-NEWTON
Organizers and Chairpersons: Naomi F. Miller and Kathryn Gleason

Participants
2:40 Kathryn Gleason; Garden Excavations at the Herodian Winter Palace, Jericho
3:10 Geoffrey C. Meehan, S. Ford, M. Bowden and V. Gaffney; The Date of "Celtic" Field Systems on the Berkshire Downs, England
3:30 Clark L. Erickson; Methodological Considerations in the Study of Ancient Andean Field Systems
3:50 William Fisher and Richard Fisher; Cows, Chips, Reefs, and Phyoliths: The Archaeology of Pasture and Range
4:10 Anne Vensel and Conrad M. Goodwin; Defining Morven's Archaeological Garden Landscape
4:30 Mary C. Beaudry; The Spencer-Pierce-Little House and Lands in Time and Mind
4:50 Lydia Mihelic Pulsipher, Geographic Field Methods for Assessing Locations, Techniques, Crops, and the Ideational Role of Slave Gardens in the Caribbean

ROCKDALE-FORSYTH
Organizers and Chairpersons: Kris H. Wilhelmson and Todd A. Koetje

Participants
1:00 Patrick Magoon; Techniques for Investigating Horizontal and Vertical Dimensions of Archaeological Deposits: An Historical Review
1:20 Kenneth C. Reid and James D. Gallison; Archaeological Depth Perception in Two North Pacific Rainforests
1:40 Joseph Schuldenrein; Soil Phosphate "Prints" and the Detection of Activity Loci at Prehistoric Sites
2:00 Jan P. Simek and Robert C. Dun nell; Artifact Density, Sherd Size and Plowzone Processes at Robards Farm (Dunklin County, Missouri)
2:20 Linda T. Grimm; Site Structure and Formation Processes in the Upper Paleolithic at Solvieux: Evidence from Lithic Refitting
2:40 Todd A. Koetje; Spatial Analysis at Le Flageolet II (Dordogne): A Preliminary Look at Three Dimensional Patterning
3:00 Michael Feagel; Spatial Analytic Techniques and Site Formation Processes at the Abri Dufaure, Southwest France
3:20 David T. Nash; Spatial Patterns and Site Formation Processes at Haystack Cave
3:40 Paul E. Buck; Formation Processes of Old Kingdom Deposits at Kôm el-Hîsîn, Egypt
4:00 Kris H. Wilhelmson; Spatial Analysis and Formation Processes: Problems with the Current Agenda
4:20 Discussants: Keith W. Kintigh and Jean-Philippe Rigaud

[18] Symposium: WOMEN AND PRODUCTION IN PREHISTORY
NORTH WING EAST
Organizer: Joan Gero
Organizer and Chairperson: Margaret Conkey

Participants
1:00 M. Alison Wylie; Gender Theory and the Archaeological Record: Why Is There No Archaeology of Gender?
1:20 Joan Gero; Women and Stone Tools
1:40 Thomas L. Jackson; Women’s Production as Social and Economic Focus
2:00 Ruth Tringham; Households with Faces: The Problem of Gender in the Prehistoric Architectural Record
2:20 Mary Kennedy and Patty Jo Watson; The Development of Horticulture in the Eastern Woodlands of North America: Women’s Role
2:40 Christine A. Hester; Food and Gender in Prehistory
3:00 Susan Pollock; Women in a Men’s World: Images of Sumerian Women
Thursday Evening, April 6

3:20 Elizabeth M. Brumfiel, Weaving and Cooking: Women's Production in Aztec Mexico
3:40 Discussants: Thomas Patterson and Linda Cordell


GRAND SALON E
Organizer: James B. Peterson
Organizer and Chairperson: Joseph E. Granger

Participants
1:00 William A. Lovis, Variation in Late Archaic Resource Availability as a Consequence of Lake Level Periodicity in the Huron Basin
1:15 David M. Stothers and Timothy J. Abel, Late Archaic-Early Woodland Band Societies and the Williams Mortuary Complex of the Western Lake Erie Region
1:30 Marjory Power, The Isle La Motte Site: A Revisionist's Look at Glacial Kame
1:45 Robert L. Blakely and Richard Woodworth, Sociocultural Implications of Mortuary Patterns and Paleopathology at a Glacial Kame Site in Vermont
2:00 Joseph E. Granger, Culture, Continuity and Cuyerville: An Inquiry into the Archaic-Woodland Interface in the Genesee River Valley of Central New York
2:15 John Pfeiffer, Late Archaic-Early Woodland in Southern New England: A Case of Cultural Continuity
2:30 Lucianne Lavin, Immigration and Innovation: The Late Archaic/Woodland Interface in Southern New England and Southern New York
2:45 Michael Stewart, Prehistoric Exchange Across the Archaic-Woodland Interface in the Middle Atlantic Region
3:00 Ronald F. Williamson and William A. Fox, Browsing on Meadowood Blades: An Investigation of Regional Exchange and Production Systems
3:15 Lawrence J. Jackson, Chestnuts in the Fire: Seasonality and Settlement Indicators for the Early Woodland in Ontario
3:30 William R. Belcher, Prehistoric Fishing Strategies in East Penobscot Bay, Maine: The Knox Site and Sea-Level Rise
3:45 John E. Krigbaum, Subsistence and Health in an Early Woodland Skeletal Population from Vermont
4:00 Michael J. Heckenberger, James B. Peterson and Louise A. Basa, Early Woodland Period Ritual Use of Personal Adornment at the Boucher Site
4:15 James B. Peterson, Michael J. Heckenberger and Louise A. Basa, Lithic and Ceramic Artifacts from the Boucher Cemetery: A Summary of Internal and External Correlations
4:30 Stephen Loring, An Early Woodland Cache from Labrador: Perceptions on Ritual and Ceremony in the "Far Northeast"
4:45 Norman Crompton, What Do You Do When You Are Out of Bounds? An Analysis of Archaic-Woodland Period Boundaries in Quebec
5:00 Discussant: Jay Custer

FRIDAY MORNING APRIL 7, 1989

[21] General Session: RESEARCH REPORTS—LITHIC STUDIES

GRAND BALLROOM A
Chairperson: Paul R. Fish

Participants
7:50 Gail Larsen Peterkin, Small Stone Projectile Points in the French Upper Paleolithic
8:00 James G. Foradas, Sourcing of Flint Using Normative Mineral Compositions and the Scanning Electron Microprobe: An Experimental Study Using Flint Ridge Flint
8:10 Susan Wurz, Lithic Analyses and Residential Patterns: Sayil, Mexico
8:20 David J. Mathen and Robert C. Thompson, The Dahoke-Reinke Site: Prehistoric Stone Tool Use in the Red River Valley
8:30 Robert Benson, Lithic Raw Material Frequency: An Insight into the Mobility Patterns of Late Quaternary Hunter-Gatherers in Southern Somalia

[22] Symposium: COLUMBIAN CONSEQUENCES, PART II: THE IMPACT OF HISPANIC COLONIZATION IN THE SOUTHEAST AND CARIBBEAN

GRAND BALLROOM A
Organizer: David Hurst Thomas
Organizer and Chairperson: Kathleen A. Deagan

Participants
9:00 Jose M. Cruzen, La Isabela 1492: First Spanish Colony in the New World
9:20 Charles Ewen, The Rise and Fall of Puerto Real
9:40 Manuel Garcia-Arevalo, Taino-Arawak Cultural Responses to Spanish Arrival in Hispaniola
10:00 Kathleen A. Deagan, Accommodation and Conflict: Process and Impact of Spanish Colonization in Sixteenth Century Florida
10:20 Eugene Lyon, The Enterprise of Florida
10:40 Jane Landers, African Presence in Early Spanish Colonization
11:00 C. Margaret Scarry and Elizabeth J. Reitz, Herbs, Fish, Scum, and Vermic: Subsistence Strategies in Sixteenth Century Spanish Florida
11:20 Stanley South, From Therdodynamics to a Status Artifact Model

[23] Symposium: SAA SPECIAL SESSION: OUR VANISHING PAST—THE WILFUL DESTRUCTION OF A NATION'S HERITAGE

GRAND SALON WEST
Organizer: Kathleen Reinhart
Organizer and Chairperson: W. James Judge

Participants
8:30 Honorable Wyche Fowler, Jr., Comments on the Looting of Archaeological Sites
9:00 Thomas F. King, The Magnitude and Dimensions of the Looting Problem
9:30 Sherry Herrgott, Protecting the Resources: The Broad Prospective
10:00 W. James Judge and Elizabeth Bruen, Visual and Verbal Images of Looting
10:30 Brian M. Fagan, Archaeology, Looting, and the Public
11:00 Jeremy A. Sabloff, Where to from Here? The Role of the Profession in the Looting Problem
11:30 Discussants: Bennie C. Keel, Loretta Neumann and Martin McAllister

THURSDAY EVENING APRIL 6, 1989


GRAND BALLROOM EAST
Organizer: Nancy M. Stone
Chairperson: James A. Sabloff

Participants
7:00 Jeremy A. Sabloff, Open Comments About Archaeological Issues Confronting the 1990's
7:00 Lewis R. Binford, Open Comments About Archaeological Issues Confronting the 1990's
7:00 Margaret Conkey, Open Comments About Archaeological Issues Confronting the 1990's
7:00 Robert C. Dunnell, Open Comments About Archaeological Issues Confronting the 1990's
7:00 Ian Hodder, Open Comments About Archaeological Issues Confronting the 1990's
Friday Morning, April 7


VIENNA-STRASBOURG
Organizers and Chairpersons: Paul A. Mellars and Harold L. Dibble

Participants
8:00 Amy Campbell, The Significance of Middle Paleolithic Water Wells at Bir Sahara in the Western Desert of Egypt
8:20 Philip G. Chase, Middle Paleolithic Subsistence Patterns in Southwest France: The Combined Evidence of Faunal Remains and Lithic Raw Material Sources
8:40 Geoffrey A. Clark, John Lindly and Nancy R. Colman, Continuity or Replacement? Middle and Upper Paleolithic Adaptations in the Levant
9:00 Ofer Bar-Yosef and Lilianne Meignen, Levantine Mousterian Variability in the Light of New Dates from Qafzeh and Kebara Cave
9:20 Simon Holdaway, Were There Hafted Projectile Points in the Mousterian?
9:40 Jean-Michel Geneste, The Development of Raw Material Procurement Activities in Southwestern France
10:00 Catherine Farizy, Subsistence and Social Organization of Middle Paleolithic Local Groups
10:20 Wil Roebroeks, Jan Kolen and Eelco Rensink, Interassemblage Variability in the Middle Paleolithic: The Raw Material Evidence
10:40 Nicholas Rolland and Harold L. Dibble, Middle Paleolithic Assemblage Variability: A Synthesis of Current Arguments
11:00 James Sackett, Stone Tools and Mousterian "Protoculture": A Dissenting View
11:20 Marcel Orte, The Significance of Industrial Variability in the European Middle Paleolithic
11:40 Discussant: Lewis R. Binford


LISBON
Chairperson: Clare M. Yarbrough

Participants
7:40 Mary Dodge, Aztec Production and Exchange of Ceramics: Archaeological Evidence and Ethnographic Models
7:50 Susan Evans and Ann Corinne Feeter, Hydration Analysis of Obsidian from Cihuatepec, an Aztec Period Village in Mexico
8:00 Antonio Curet, Specialized Ceramic Production Areas: An Example from La Mixtequilla, Veracruz, Mexico
8:10 Anabel Ford and Scott L. Fedick, Programme for Belize: Management of Prehistoric Maya Cultural Resources in a Tropical Forest Preserve
8:20 Thomas H. Guiderian, James F. Garber and Lisa Brody, An Initial Report on Chan Chich and Other Sites in Northwestern Belize
8:30 James F. Garber, Excavations at the Late Classic Maya Site of Chac Balam on Ambergris Cay, Belize: Results of the 1988 Field Season
8:40 Walter R.T. Wittchey, Recent Investigations at the Inland Maya Port City of Muyil, Quintana Roo, Mexico
8:50 Gary Walters, Maya Ceremonial Caves Project: 1988-1989 Field Seasons
9:00 J. Jefferson MacKinnon and Emily M. May, Small-Scale Maya Lintemaking in Belize: Ancient and Modern

[26] Symposium: MAYA SUBSISTENCE: ARCHAEOLOGICAL AND ETHNOBIOLOGICAL APPROACHES

LISBON
Organizer and Chairperson: Heather McKillop

Participants
9:30 Mary Pohl, Charles Miksicek, J. Jefferson MacKinnon and Fred Wiseman, Preclassic Maya Wetland Fields, Albion Island, Northern Belize
9:50 Cathy Crane, The Palynology and Archaeobotany of Cerros, Belize
10:10 Javier Caballero, Modern Maya Homegardens
10:30 Heather McKillop, Coastal Maya Tree-Cropping at Wild Cane Cay, Belize

Friday Morning, April 7

10:50 Arturo Gomez-Pampa, The Management of Maya Forests
11:10 Christine White, Chemical and Trace Element Analyses of Human Bone from Lamanai, Belize
11:30 H. Soraya Carr, Patterns of Exploitation and Exchange of Subsistence Goods in Late Classic-Early Postclassic Yucatan: A Zooarchaeological Perspective

[27] Symposium: NATIONAL FORESTS IN THE SOUTH: CULTURAL RESOURCES AND MANAGEMENT

NORTH WING WEST
Organizers and Chairpersons: Meeks Etchieson and Gary Knudsen

Participants
7:40 Marvin C. Meier and Kent A. Schneider, Fifteen Years of CRM in the Southern Region: An Overview
8:00 Gary Knudsen, The Many Hats of a Cultural Resource Manager: What Cultural Resource Managers Can Learn From Other Management Programs
8:20 Jack T. Wynn, Mississippian Period Archaeology in the Georgia Blue Ridge Mountains
8:40 William H. Radisch, Rodney J. Snedeker and Michael A. Harmon, Trends in Archaic Mobility and Site Function in the Appalachian Summit
9:00 Kristen J. Gremler and Cecil R. Isen, Terminal Archaic and Early Woodland Plant Utilization Along the Cumberland Plateau
9:20 Meeks Etchieson, Prehistoric Use of Geologic Resources in the Ouachita Mountains
9:40 Sam Brookes, Prehistoric Excavation in Mississippi 4000 B.C. to A.D. 1500
10:00 Discussants: Ann Early and Bennie C. Reel

[28] General Session: PERU I: PRECERAMIC CULTURES

NORTH WING WEST
Chairperson: Sheila Pozorski

Participants
10:40 James B. Richardson, III, Jeffrey T. Hsu and Daniel H. Sandweiss, Environmental Dynamics and the Interpretation of Patterning in Preceramic Remains from South Coastal Peru: Uplift and Sea Level
11:00 Thomas Pozorski and Sheila Pozorski, Late Preceramic Sociopolitical Organization in the Casma Valley, Peru
11:20 Elsbieta Zecher, Subsistence Changes in Coastal Peru During the Second and Third Millennium B.C.
11:40 Jack Rossen, The Nanchoc Culture: Preceramic Horticulturalists of the Upper Zana Valley, Northern Peru

[29] Symposium: CERAMIC PRODUCTION AND DISTRIBUTION: AN INTEGRATED APPROACH

GRAND BALLROOM B
Organizers and Chairpersons: George J. Bey III and Christopher A. Pool

Participants
8:00 Dean E. Arnold and Alvaro Nieves, Factors Affecting Ceramic Standardization
8:20 Gary Feinman, Stephen Kowalewski, Sherman Banker and Linda Nicholas, Ceramic Production and Distribution in Late Postclassic Oaxaca: Stylistic and Petrographic Perspectives
8:40 Kathleen M. Allen, Ceramic Manufacture and Distribution at the Household Level: The Iroquois
9:00 Paul Nicholson and Helen Patterson, The Ballas Pottery Project: Ethnoarchaeology in Upper Egypt
9:20 Barbara L. Stark, Modeling Ceramic Production in La Mixtequilla, Central Veracruz, Mexico
9:40 Christopher A. Pool and Robert S. Santley, Models of Middle Classic Pottery Production and Distribution in the Tuxtlas Mountains, Southern Veracruz, Mexico
Friday Morning, April 7

10:00  Karen Chavez, Traditional Pottery Production and Distribution in South Highland Peru: Implications for Archaeology
10:20  Elizabeth Ledyng Will, Production and Distribution of Roman Amphoras
10:40  Ezra Zubrow, The Archaeological Implications for Ceramics of Formal Production and Distribution Models
11:00  Discussant: Robert S. Santley

ROCKDALE-FORSYTH
Organizers and Chairpersons: Gregory Monks and James M. Savelle

Participants
8:00  Arthur Spiess, Deer Tooth Sectioning, Erupition, and Seasonality of Deer Hunting in Prehistoric Maine
8:20  Marvin Kay, Prospects for Archaeological Seasonalitv Estimates Based on Modern Odocoileus virginianus Cementum
8:40  Gregory Monks, Methods of Analyzing Growth Increments in Bison Teeth
9:00  Ariane Michelle Burke, Cementum Incremental Study of Equids
9:20  Douglas Brewer, Chronologies and Paleoenvironments: Incremental Growth Structures of the Nile Perch (Lates niloticus)
9:40  Don Albright, Precision of Seasonality Determination in Ringed Seals (Phoca hispida)
10:00  James M. Savelle and Don Albright, Comparison of Preparation and Examination Techniques in Dental Annuli Analysis
10:20  Hiroko Koike, Recent Developments in Seasonal Dating Techniques in Japan
11:00  Bryan C. Gordon, Archaeological Tooth and Bone Seasonal Increments: The Need for Standardized Terms and Techniques
11:20  Discussants: Donald Grayson, R. Lee Lyman and Cheryl Claassen

[31] Symposium: KALINGA ETHNOARCHAEOLOGY
NORTH WING EAST
Organizer and Chairperson: William A. Longacre
Participants
9:00  William A. Longacre, Longitudinal Ethnoarchaeology: The Kalinga Project Over 15 Years
9:20  Miriam Stark, The Regional Exchange System: An Ethnoarchaeological Case Study
9:40  Masashi Kobayashi, Use-Wear Analysis of Cooking Pots
10:00  James Skibo, The Kalinga Cooking Pot: An Ethnoarchaeological and Experimental Evaluation of Performance Characteristics
10:20  Brian Troxel, Intravillage Ceramic Patterning: An Economic Perspective
10:40  Ramon Silvestre, Basketry Standardization in a Tribal Society
11:00  Jose Lorde R. Villamor, Kalinga Rice Terraces
11:20  Discussants: Warren DeBour and Michael Deal

[32] General Session: PLAINS ARCHAEOLOGY
FAYETTE-NEWTON
Chairperson: Lawrence C. Todd
Participants
8:30  Charles A. Reher, Pursuing the Past to Further the Future: Research, Education, and Economic Development at the High Plains Archaeology Project
8:50  Alycia A. Levenson, Judith A. Habicht-Mauhe and Margaret J. Schoening, Testing Models of Antelope Creek Phase Subsistence Using Bone Chemistry Analyses
9:10  David Melzer, Alithermal Archaeology on the Southern High Plains
9:50  Donna C. Roper, Economic Change in the Village Period on the Central Plains

Friday Afternoon, April 7

10:10  Stephan Lensink, Resource Depletion and Inter-Societal Conflict in the Initial Variant of the Middle Missouri Tradition
10:30  Donald J. Blakeslee and Kim N. Schneider, Prehistoric Social Organization from Dental Enamel Composition: A Preliminary Study
10:50  Fred Schneider and Michael Michlivojc, The Shea Site and the Process of Plains-Woodland Interaction
11:10  James M. Collins, The Perspicuous Art of Paper Archaeology: A Cautionary Tale
11:30  Mary Whelan, Randall Withrow and Barbara H. O'Connell, The Black Dog Burial Site, 21-DK-26: Evidence for Culture Change at a 19th Century Dakota Indian Cemetery

FRIDAY AFTERNOON APRIL 7, 1989

[33] Symposium: COPING WITH SITE LOOTING: SOUTHERN PERSPECTIVES
NORTH WING WEST
Organizers and Chairpersons: Kent A. Schneider and John Ehrenhard

Participants
1:00  Rodney J. Sneedler and Michael A. Harmon, Archaeological Vandalism in the Southeastern National Forests
1:20  Bob Carr, Deterrents to Site Vandalism in Urban Settings: The Miami Example
1:40  Robert C. Wilson and Thomas Desjean, Vandalism Behavior in the Southeast National Parks-Diagnoses and Treatments
2:00  Julia (Jill) Elmendorf, A Role for the Amateur Archaeologist: Allies in Decreasing Site Looting
2:20  Robert M. Thorpe, Preservation Is a Use: Sites Can Be Protected
2:40  John Jameson, Co-Management of Vandalized Sites: Opportunities and Problems
3:00  Michael Moore, A Review of the Tennessee State Cemetery Law and Its Impact Upon Prehistoric Site Preservation
3:20  Ray A. Williamson and Fred Blackburn, Approaches to Curbing Vandalism and Pot Hunting of Archaeological Resources
3:40  Discussant: Kathleen Reiburg

[34] General Session: EUROPEAN ARCHAEOLOGY: LATE QUATERNARY STUDIES
VIENNA-STRASBOURG
Chairperson: Michael A. Jochim

Participants
1:00  Berit Valentin Eriksen, Modeling Intersite Settlement Patterns in the Late Paleolithic and Early Mesolithic of Southwest Germany
1:20  Roger Colten, Daniela B. Burroni, Randolph E. Donahue and Christopher O. Hunt, Paleolithic Research in the Farma Valley, Tuscany, Italy
1:40  Daniel Evett, Modeling Mesolithic Plant Food Consumption: The Case from Italy
2:00  Thomas Fletcher, System Scale, Information, and Organizational Change in Tribal Social Systems
2:20  Margaret Glass, The Horse in Neolithic Central Europe
2:40  Christopher Polglase, Competing Sources, Resource Availability and Utilization at the End of Long-Distance Obsidian Exchange Routes
3:00  Gary Shaffer and Sandro Bonardi, Stentinello Rock Features from Calabria, Italy
3:20  Christopher Hoffman, The Beginnings of Metallurgy in the Western Mediterranean
3:40  Douglas W. Bailey, Investigating Value Socially in the Prehistory of Northeastern Bulgaria
4:00  Robert M. Ehrenreich and Massimo Vidale, Metallurgical Workshops: Production in the Foothill Settlements of Northeastern Italy
4:20  Matthew L. Murray, Iron Age Transformations: Settlement Pattern Analysis and the Changing Socio-Cultural Organization of Space in Southern Germany
4:40  Gary Webster, Elite Majorities and the Emergence of Stratification in Prehistoric Europe
Friday Afternoon, April 7


GRAND BALLROOM A
Organizers and Chairpersons: Mary E. Pye and Michael Love

Participants
1:00 Rebecca Gonzalez, Archaeological Investigations at La Venta: 1984-1988
1:40 James T. Myers, New Evidence on the Evolution of Regional Economy on the South Coast of Guatemala
2:00 Thomas Wake and Justin Hyland, Early Formative Flora, Fauna, and Estuarine Subsistence Systems in South Coastal Guatemala
2:20 John E. Clark and Michael Blake, The Early Formative Sequence at Chiaspas, Mexico
2:40 Michael Love and Thomas L. Jackson, Middle Formative Exchange in Pacific Guatemala: Sources of Obsidian from La Blanca
3:00 Ariadne H. Prater, Early Art Styles at Kaminaljuyu
3:20 Eugenia J. Robinson, Middle Preclassic Populations in the Central Highlands of Guatemala
4:00 Discussants: David C. Grove and Barbara L. Stark

[36] Symposium: HOUSEHOLDS AND SETTLEMENTS IN THE MISSISSIPPIAN PERIOD

GRAND SALON WEST
Organizers and Chairpersons: J. Daniel Rogers and Bruce D. Smith

Participants
1:00 Richard W. Yerkes and John Nass, Jr., Social Differentiation in Mississippian and Fort Ancient Societies
1:20 John Kelly, Emergent Mississippian Community and Household Organization in the American Bottom
1:40 Mark Mehler and James M. Collins, Household Archaeology at Cahokia and Its Hinterlands
2:00 Robert H. Laflerty, III and Neal H. Lopinot, Mississippian Household Organization and Subsistence During the Middle Fourteenth Century, Buffalo National River, Arkansas Ozarks
2:20 J. Daniel Rogers, Dispersed Communities and Integrated Households: A Perspective from Spiro and the Arkansas Basin
2:40 Tim S. Mistovich, Toward an Explanation of Variation in moundville Phase Households in the Black Warrior Valley, Alabama
3:00 H. Edwin Jackson and Susan L. Scott, Mississippian Homestead-Village Symbiosis: Faunal Exploitation in the Tombigbee Valley
3:20 Lynne F. Sullivan, Household and Community Organization of the Mouse Creek Phase
3:40 James W. Harch, Lamar Period Farmsteads in Piedmont Georgia
4:00 Mark Williams, Chiefly Compounds
4:20 John F. Scarry, Apalachee Households: Examining the Basin Social Economic Units of a Mississippian Society
4:40 Discussants: James A. Brown

[37] General Session: ARCHAEOLOGY IN CALIFORNIA

NORTH WING EAST
Chairperson: James L. Rudolph

Participants
1:00 Daniel O. Larson, Joel Michaelson and Phillip L. Walker, Climatic Variability: A Compounding Factor of Cultural Change Among Prehistoric Coastal Populations
1:20 James L. Rudolph, Overexploitation and Site Selection at Explanations of Valve Length in Mytilus californianus
1:40 Leslie L. Hartzell, Buena Vista Lake: Further Investigations into "Lacustrine Adaptations"
2:00 Mark Q. Sutton, Prehistoric Dietary Preferences in the Salton Basin, California
2:20 Kent Lightfoot, Archaeology in the Hinterland of Fort Ross, California

Friday Afternoon, April 7

[38] Symposium: ETHICS IN PROFESSIONAL ARCHAEOLOGY

NORTH WING EAST
Organizer and Chairperson: J. Ned Woodall

Participants
2:50 Mark S. Frankel, The Professional Society Role in Promoting Ethical Conduct
3:10 Edward B. Jelski, Ethics, Professionalism and Archaeology
3:30 Stephen Caggerty, Someone Is Always Going to Be Unhappy with My Decisions: A State Archeologist's Perspective on Ethics and Public Archaeology
3:50 Michael A. Glassow, Ethical Issues Brought About by the California Environmental Quality Act
4:10 Toni Carrell, Ethics Vs. Commercial Exploitation: What's It Worth to the Future?
4:30 Michael Roberts, Ethics and Archaeology for Profit
4:50 Discussants: George Rupp, Jr., and Charles E. Cleland

[39] Symposium: ARCHAEOLOGY IN ACTION

ROCKDALE-FORSYTH
Organizer and Chairperson: Renee Kra

Participants
1:00 Ronald G. V. Hancock, Neutron Activation Analysis: Is it of Any Real Use to Archaeology?
1:20 Charles P. Swan, Patrick E. McGovern and Stuart J. Fleming, Characterization of Ancient Materials Using PIXE Spectrometry
1:40 Andrew D. Weiss, On the Edge of CASM: Computer Assisted Surveying and Mapping in the Field
2:00 Ann Rufo and William Glanzman, Novel Applications of X-Ray Technologies in Archaeology
2:40 Scott Madry, Remote Sensing in Archaeology: A Regional Approach to Non-Destructive Analysis
3:00 Harold W. Borns, Paleoethnobotany from Glacier Ice Cores
3:20 Malcolm Hughes, Tree Rings as Records of Large-Scale Environmental Events
3:40 Austin Long, B. F. Ben, D. J. Donahue and A. J. Jull, First Direct AMS Dates on Early Maize from Tehuacan, Mexico
4:00 Stephen W. Robinson, The Probabilistic Calibration of Radiocarbon Ages
4:20 Renee Kra, New World Quaternary Vertebrate Localities: The First Pilot Project of the International Radiocarbon Data Base (IRDB)
4:40 Discussants: Stuart J. Fleming

[40] General Session: PALEOINDIAN STUDIES

GRAND BALLROOM B
Chairperson: Jack L. Hofman

Participants
1:00 Dennis B. Blanton and Frankie Snow, Paleoindian and Early Archaic Occupations at the Fornia Locality in South-Central Georgia
1:20 Jack L. Hofman and Lawrence C. Todd, Reinvestigation of the Lipscomb Bison Kill and Its Significance for Folsom Period Research
1:40 Mark E. Miller, George C. Frison and Kyle C. Baber, Continuing Investigations at the Finley Paleoindian Site in Sweetwater County, Wyoming
2:00 Michael R. Waters and Anne I. Woosley, A Geoarchaeological Reevaluation of Early Cochise Culture Artifact Associations with Pleistocene Lake Cochise, Arizona
2:20 Shirley Jo Barr, Blood from Stones: Blood Residue Analysis of the Dietz Site Clovis Artifacts
Saturday Morning, April 8

3:40 Laurie Zimmerman and D. Gentry Steele, Dietary Reconstruction of Hunter-Gatherers of the Eastern Margin of the Tamaulipan Biotic Province
4:00 Azlene Fradkin, Cherokee Animal Classifications: Correlates to the Cherokee Zooarchaeological Record
4:20 Barry Rolett, The Polynesian Analogy to Pleistocene Faunal Extinctions: New Evidence from the Marquesas Islands

SATURDAY MORNING APRIL 8, 1989

GRAND BALLROOM A
Organizer and Chairperson: David Hurst Thomas
Participants
8:00 David Hurst Thomas, Missions of the Spanish Borderlands: A Trans-Continental Reflection
8:20 John W. Griffin, Changing Perspectives on the Spanish Missions of La Florida
8:40 Clark Larsen, Margaret J. Schoening, Katherine F. Russell and Dale L. Hutchinson, Beyond Demographic Collapse: Biological Adaptation and Change in Native Populations of La Florida
9:00 David J. Weber, Blood of Martyrs, Blood of Indians: Toward a More Balanced View of Spanish Missions in Seventeenth Century North America
9:20 Michael V. Gannon, Defense of Indian Rights in the Florida Franciscan Missions
9:40 Conrad Hartkens, O.F.M., On Removing Sand from Our Brothers' Graves: The Interest of Modern Franciscans in Uncovering the Traces of the Franciscan Province of Santa Elena
10:00 Amy Turner Bushnell, The Sacramental Imperative: The Relationship of Catholic Ritus to Indian Subsistence and Settlement in the Province of Florida
10:20 B. Calvin Jones and Gary Shapiro, Nine Mission Sites in Apalachee
11:00 Rebecca Saunders, Ideal and Innovation: Spanish Mission Architecture in the Southeast
11:20 Elizabeth J. Reitz, Zooarchaeological Evidence for Subsistence at La Florida Missions
11:40 Donna Ruhl, Spanish Mission Paleoenvironments: An Overview and Some Speculations on Sixteenth and Seventeenth Century La Florida

[45] Symposium: CORRIDOR STUDIES IN CONTRACT ARCHAEOLOGY
MILAN
Organizer and Chairperson: David J. Rue
Participants
9:00 James Cleland, Multi-Stage Research in the Siting and Assessment of Linear Projects
9:20 David J. Rue, Intersite Analysis of 20 Lithic Assemblages from a 140 Mile Pipeline Corridor in Southern Indiana
9:40 A. E. Rogge, Patrick M. O'Brien and Everett J. Bassett, Going Down That Long Lonesome Corridor
10:00 John Haynes, The Dulles Sites: Proposed Highway Corridors Reveal Late Archaic Spatial Organization
10:20 Jeannette E. Buehrig, The Grenade Pit Site [12-B-815]: A Significant Multi-Component Site at Atterbury RTFA, Bartholomew County, Indiana
10:40 Jeannine Kreinbrink, The Woodward Site: One Piece of a Big Puzzle in Southeast Pennsylvania
11:00 Discussant: Deborah Vrabel
[46] Symposium: VILLAGE COMMUNITIES IN EARLY COMPLEX SOCIETIES
GRAND BALLROOM B
Organizers and Chairpersons: Steven E. Falconer and Glenn M. Schwartz

Participants
8:00 Bonnie Magness-Gardiner, Urban-Rural Relations in the Second Millennium B.C. Levant: The Textual Evidence
8:20 Glenn M. Schwartz, Excavations at Tell Raqa'i: A Small Rural Site of Early Urban Northern Mesopotamia
8:40 AnnCorinne Preter, The Role of Rural Settlement Analysis at the Maya Center of Copan, Honduras
9:00 Nancy Gedin, Rural Occupation of the Classic Maya at Copan
9:20 Patricia Wattenmaker, Political Centralization and the Reorganization of Rural Production
9:40 Gil Stein, Segmentary State and Organizational Variation in Early Complex Societies: A Rural Perspective
10:00 Thomas R. Hester and Harry J. Shafer, The Ancient Maya Craft Community at Colha, Belize and its External Relationships
10:20 Elizabeth King and Daniel Potter, Small Sites in Prehistoric Maya Socioeconomic Organization: A Perspective from Colha, Belize
10:40 Robert S. Santley, Urban-Rural Interrelationships at Matacapan, Veracruz, Mexico
11:00 Ilene M. Nicholas and Elizabeth Henrickson, Functional Analysis of Al-Qesir, an Early Bronze Age Transjordanian Site
11:20 Steven E. Falconer, Mary C. Metzger and Patricia L. Fall, Early Village Life in the Jordan Valley: A Study of Rural Social and Economic Complexity
11:40 Discussants: Brian D. Hayden and Carol Kramer

[47] Symposium: APPLICATIONS OF MAMMALIAN MORTALITY DATA FOR THE STUDY OF PREHISTORIC HUMAN PREDATOR ECOLOGY
LISBON
Organizer and Chairperson: Mary C. Stiner

Participants
8:00 Robert J. Blumenschine, Evaluating Size and Age Mortality Profiles as Criteria for Distinguishing Hominid Scavenging and Hunting
8:30 Jean Hudson, Identifying Non-Selective, Small Game Hunting Strategies in the Archaeological Record
8:50 Gary Haynes, Megamammal Age Profiles: Meaning or Ambiguity?
9:10 Mary C. Stiner, Mortality Patterns as Indicators of Upper Pleistocene Human Predator Niche: A Comparative Perspective
9:30 Diane Gifford-Gonzalez, Examining and Refining the Klein Crown Height Method of Age Estimation
9:50 R. Lee Lyman, Subsistence Change and Pinniped Hunting
10:10 John D. Speep, Taphonomy and Human Behavior: Problems in Distinguishing Cultural and Non-Cultural Agents
10:30 Lawrence C. Todd, Seasonality Studies and Paleoindian Subsistence Strategies
10:50 George C. Frison, Prehistoric High Plains Hunting Strategies Based on Mortality Studies from Faunal Remains in Archaeological Sites and Animal Behavioral Studies

[48] General Session: AUTOMATED METHODS: COMPUTERS AND MECHANICAL DEVICES
DUSSELDORF
Chairperson: Lawrence E. Bradley

Participants
7:40 Anne Swearingen DeFrance and Jane Stone, Museum Database: A Relational Database of Collections Management and Research
8:00 Ian R. Johnson and Helen S. Clemens, Beyond Registration: Making Site Registers Relevant to CRM
8:20 Lynne Mackin Wolford, Computer Simulation of Infectious Disease Diffusion in Prehistoric Populations

[49] Symposium: ARCHAEOBOTANY THROUGH PHYTLITH ANALYSIS
DUSSELDORF
Organizers and Chairpersons: George Rapp, Jr. and Susan Mulholland

Participants
9:25 Irwin Rovner, New Methods of Microscopic Imaging and Rapid Image Analysis of Microfossil and Micropaleontological Material
9:45 Dolores Piperno and Deborah M. Pearsall, Some Comments on the Role of Phyolith Analysis in Neolithic Paleoethnobotany and Paleoeconomy
10:05 Lawrence Kaplan, Mary B. Smith and Lesley Anne Sneddon, Cereal Grain Phyoliths of the Near East
10:25 Susan Mulholland, Grass Opal Phyolith Production: A Basis for Archaeological Interpretation in the Northern Plains
10:45 Elizabeth J. Lawlor, Taphonomy of Phyoliths in the Mohave Desert: A Preliminary Report
11:05 John Ramsey and Irwin Rovner, Phyolith Extraction from Equid Tooth Cementum
11:25 Linda Scott-Cummings, Diet and Nutritional Stress in Two Ancient Christian Sudanese Nubian Populations: The Coprolite Record
11:45 John G. Jones, The Extraction and Analysis of Calcium Oxalate Phyoliths from Archaeological Sediments and Coprolites

[50] Symposium: PALEOSHORELINES AND PREHISTORIC SETTLEMENT
NORTH WING EAST
Organizer and Chairperson: Lucy Lewis Johnson

Participants
8:00 Margaret Anne Winslow, Modeling Paleoshorelines at Tectonically Active Margins
8:20 Lucy Lewis Johnson, Paleoshorelines and Prehistoric Settlement on Simeonof and Chichagof Islands, Outer Shumagin Islands, Alaska
8:40 William W. Fitzhugh and Peter Clark, Beach Ridge Chronology on the Labrador Coast: Archaeological, Geological, and Paleoclimatic Results
9:00 James Dunbar, The Natural Resource Orientation of Clovis and Swannacean Age Paleoindian Sites in Florida with Particular Reference to the Outer Continental Shelf
9:20 Ervan G. Garrison, Recent Archaeo-Geophysical Studies of Paleoshorelines of the Eastern Gulf of Mexico
9:40 William F. Keegan, Lucayan Settlement Patterns and Recent Coastal Changes in the Bahamas
10:00 Jack Donahue and David R. Watters, Barbuda, Lesser Antilles: Shoreline Change Before and During Prehistoric and Historic Occupation
10:20 Eugene McDougall, Mangroves and Sand Dunes: Changing Economies Along the Changing Prehistoric Shorelines of Southwest Ecuador
10:40 Michael Moseley, David Wagner and James B. Richardson, III, Space Shuttle Imagery of Shoreline Alteration Processes on the Peruvian Coast
11:00 Discussants: Melanie J. Stright and Richard H. Jordan

[51] Symposium: CULTURE CHANGE AND VARIABILITY IN THE UPPER PALEOLITHIC
VIENNA-STRASBOURG
Organizers and Chairpersons: Anne Piko, Anne Knecht and Randall White

Participants
8:00 Anna Beller-Cohen and Ofer Bar-Yosef, Non-Artifact Remains from the Levantine Upper Paleolithic
8:20 Francis B. Harrold, Functional Lithic Variability in the Upper Paleolithic Perigord
8:40 Anna Backer and Michel Guibaud, The Spatial Distribution of Microdebitage in Aurignacian and Castelperronnian Levels of St. Cesaire (Charente Maritime)
9:00 Heidi Knecht, Design Variability in Aurignacian Bone and Antler Projectile Technologies
9:20 Michel Dewez, Production Strategies of Bone and Antler Technology in Belgium
9:40 Joachim Hahn, Interassemblage Variability of the Aurignacian in Central Europe
10:00 Randall White, Variation and Change in the Structure of Aurignacian Decoration and Body Ornamentation
10:20 Anne Pike Tay, Changes in Seasonal Exploitation of Red Deer in the Upper Paleolithic of Southwest France
10:40 James G. Enloe, Faunal Evidence for Subsistence Change in the Upper Paleolithic
11:00 Discussants: Olga Sofer and Donald Grayson

[52] General Session: ARCHAEOLOGY OF THE SOUTHEASTERN WOODLANDS AND CARIBBEAN
NORTH WING WEST
Chairperson: David Carlson

Participants
8:00 Mark J. Lynott and James E. Price, The Late Woodland to Mississippian Transition in the Eastern Ozark Region, Southeast Missouri
8:20 David William Zeeman, Diet Breadth and the Adoption of Horticulture in the Eastern United States
8:40 Mark Madsen and Robert C. Dunnell, Role of Microartifacts in Deducing Land Use from Low Density Records in Plowed Surfaces
9:00 David Carlson, Pattern Recognition and Cultural Stratigraphy: An Example from East Texas
9:20 Richard Edging and Paul Kreiss, Perspectives on Late Prehistoric Subsistence Economies in the Mid-South
9:40 Vernon James, Jr., Knight, Mississippian Social Organization
10:00 Marion E. Smith, Jr., and John F. Scarry, A Disquieting Synthesis of Apalachicola Fort Walton: Micro-Scales for Mississippian Research
10:20 Teresa Rudolph, A Tribal Ceremonial Center in Regional Context
10:40 Charles L. Hall, Investigating Archaic Settlement in Middle Tennessee
11:00 Brett Rigg, Norman D. Jefferson and George M. Crothers, Conflict and Stress at Hiwassee Old Town During the American Revolution
11:20 Nancy Watford Hoffman, Island Adaptation: The Implications of a Spanish Ceramic Assemblage in a Lucayan Site
11:40 David R. Waits and James B. Petersen, The Fountain Cavern Ceremonial Site, Anguilla, West Indies

[53] General Session: RESEARCH REPORTS—SOUTHWEST

FAYETTE-NEWTON
Chairperson: Christian E. Downum

Participants
7:40 Kelly J. Schroeder, Hobokom Mortuary Remains and Village Movement at Pinnacle Peak Village-AZ-U5:5(A SU)
7:50 John B. Welch, Archaeology at the Fenster School of Southern Arizona: A Reevaluation of the Sabino Canyon Ruin and Comments on 60 Years of Precolligative Educational Programs
8:00 James Woodman, Toward an Understanding of Prehistoric Political Complexity in Central Arizona: An Example from Fournile Ruin
8:10 Yasushi Kojo, Autonomous Ceramic Production in the Northern Southwest
8:20 Edgar Hubert, Green Lizard Site: Excavations at a Late Pueblo III Small Habitation
8:30 Harry J. Shafer, The Swarts Ruin Revisited: An Assessment of the 1920's Excavation and Data Potential
8:40 Judith A. Habicht-Mauche and Winifred Creamer, Analysis of Room Use at Arroyo Hondo
8:50 Alison E. Rautman, Agricultural Risk and Subsistence Strategies at the Rite Site, Central New Mexico

[54] General Session: HISTORICAL ARCHAEOLOGY

FAYETTE-NEWTON
Chairperson: John White

Participants
9:35 Paul Shackel and Barbara J. Little, Historical Anthropology in Annapolis, Maryland: Ongoing Research
10:15 Mark Wagner and Mary R. McCorvie, The "Old Landmark": An Early to Mid-Nineteenth Century Tavern Along the Saint Louis-Vincennes Trace
10:25 Peter Bleed and Christopher Schoen, Sales Out the Front Door, Rejects Out the Back: Production and Debris at the Lincoln Pottery Works
10:45 Marcel Kornfeld, Dale L. Wedel, Todd Guenther and Charles A. Reher, Wyoming Territorial Penitentiary: Confined Space, Industrial Production and Behavioral Modification
11:05 Jeffrey Girard, System Definition and Historic Archaeological Sites Near Taos, New Mexico
11:25 Margaret Purser, Tales from the Bishop's Bodega: Late Colonial Ceramics from Antigua, Guatemala
11:45 Stanley Olsen, Tenth Century Lamellar Armor from Tibet

[55] General Session: BIOARCHAEOLOGY AND MORTUARY ANALYSIS

ROCKDALE-FORSYTH
Chairperson: Lynn M. Snyder

Participants
9:25 Donna Boyd and C. Clifford Boyd, Jr., Effects of Subsistence and Masticatory Anatomy Across a Prehistoric Skeletal Sample from Tennessee
9:45 D. Gentry Steele and Michael R. Waters, Osteological Analysis of Human Skeletal Remains Assigned to the Sulphur Springs Stage of the Cochise Culture (Ca. 8,200-10,400 B.P.)
10:15 Jonathan D. Kent, T. Rose Holdcraft and Makoto Kowta, Aspects of Field Conservation and Analysis of Perishable Remains from a Late Nasca Cemetery in South Coastal Peru
10:35 Mark Schurr, The Significance of Middle Mississippian Mortuary Treatments: A Statistical and Isotopic Perspective
10:55 Lane Anderson Beck, Ethnic Boundaries and the Copena Mortuary Complex
11:15 Darrell Creel, Cremation in Mimbres Mogollon Mortuary Programs
11:55 Dianna Bolt, Neolithic Cemeteries in Southwestern Asia

[56] General Session: SOUTHEASTERN MESOAMERICA AND CENTRAL AMERICA

ROCKDALE-FORSYTH
Chairperson: Hector Neff

Participants
7:40 William R. Swezy, Eugenia J. Robinson and Castulo Pac Raxon, Archaeological Survey of the Southeast Cakchiquel Speaking Region
8:00 Hector Neff, Episodic Ceramic Development in Pacific Coastal Guatemala
8:20 Julia Miller, Edward M. Schortman and Patricia A. Urban, Middle Preclassic Remains at the Site of Santo Domingo, Naco Valley, Honduras
8:30 Anna M. Rago Volk, Formative Villages in Southern Pacific Costa Rica: Comparisons with the Intermediate Area
8:50 Patricia Hansell, Interpreting Deflated Features of the Past: Intricate Patterning in a Multi-Component Site from Central Panama
SATURDAY AFTERNOON APRIL 8, 1989

[57] Symposium: THE FRYXELL SYMPOSIUM: HUMANS, DIETS, AND CULTURES—INTERDISCIPLINARY APPROACHES TO THE STUDY OF PREHISTORIC PEOPLES

GRAND BALLROOM A
Organizer and Chairperson: George R. Milner

Participants
1:00 William T. Sanders and David L. Webster, The Conjunctive Approach Revisited: The Archaeology of Copan in the 1980’s
1:20 Michael D. Wiens, Reflections on a Long-Term Regional Archaeological Program: Thirty Years of Middle Woodland Studies in the Lower Illinois Valley
1:40 John D. Speith and Katherine A. Spielmann, Prehistoric Human Diet and Subsistence Strategies: The Contributions of Faunal Studies
2:00 Gail E. Wagner, Mississippian Farmers of the Central Ohio Valley
2:20 Margaret J. Schoening and T. Douglas Price, Bone Composition Studies in Archaeology
2:40 Jane E. Bulikstra, A Carbon Isotopic Perspective on Dietary Variation in Late Prehistoric Western Illinois
3:00 Mary Lucas Powell, Paleopathology in Social Context: Health and Ranked Status at Moundville
3:40 Discussants: Bruce D. Smith, Donald J. Ortner and Joseph B. Lambert

[58] Symposium: WOMEN IN ARCHAEOLOGY: THE SECOND ANNUAL SYMPOSIUM ON THE HISTORY OF AMERICAN ARCHAEOLOGY

NORTH WING EAST
Organizer and Chairperson: Jonathan E. Reyma

Participants
1:00 Jonathan E. Reyma, Women in Archaeology: An Introduction and Some Historical Notes
1:20 Janis H. Kelley, Being and Becoming
1:40 Hester A. Davis, Women in Teocenti: Inroads in the Old Boys Network
2:00 Mary Anne Levine, Women in Americanist Archaeology: The First Generation (1920-1960)
2:40 Frances Joan Mathen, Women of the Chaco: Then and Now
3:00 Carol Mason, From the Other Side of the Looking Glass: Women in American Archaeology in the 1950’s
3:20 Discussants: Nathalie F.S. Woodbury and Dena Dincauze

[59] Symposium: ENVIRONMENT, ECONOMY AND SOCIETY IN THE KHABUR DRAINAGE, SYRIA

NORTH WING WEST
Organizer and Chairperson: Frank Hole

Participants
1:00 Frank Hole, Patterns of Adaptation in the Jezireh
1:20 Joy McCorriston, Environment, Farming, and Mobility in the Khabur Drainage
1:40 Melinda Zeder and Elizabeth Myler, Animal Utilization at Umm Qa’ir
2:00 James Blackman, Obsidian Exchange During the Halaf and Uruk in the Khabur Drainage
2:20 Thomas E. Davidson, The Halaf-Ubaid Transition in the Wadi Dara Area
2:40 Gregory Johnson, Umm Qa’ir in Syria and Late Uruk in Greater Mesopotamia
3:00 Discussants: Mary Voigt and Edward Banning

Saturday Afternoon, April 8


NORTH WING WEST
Chairperson: Robert E. Warren

Participants
3:40 Rinita Dalan, William Iseminger, George R. Holley and Melvin L. Fowler, A Reconsideration of the Central Palisade at the Cahokia Site
4:00 William I. Woods and Neal H. Lopinot, Dynamic Patterns of Food Production at Cahokia
4:20 Alan Brown and Bonnie L. Gums, The West Side Story: Archaeological Investigations on the Periphery of the Cahokia Site
4:40 Kevin P. McGowan, Cultural Interaction at the Woodfordian Margin During the Late Woodland and Mississippian Periods in Illinois
5:00 Rochelle Lurie, Robinson Reserve: A Longford Tradition Habitation and Mound Site on the Des Plaines River in Chicago, Illinois
5:20 Robert Salzer, Mississippian Warfare: Archaeology, Oral History and Rock Art in the Upper Midwest

[61] General Session: THE SOUTHERN SOUTHWEST

MILAN
Chairperson: John E. Douglas

Participants
1:00 Barbara Roth, Changing Perceptions of the Late Archaic: An Example of the Tucson Basin
1:20 David E. Doyel, Prehistoric Inter-Regional Ceramic Exchange in Southern Arizona
1:40 John E. Douglas, A Reevaluation of Nonlocal Ceramics at Paquime (Casas Grandes) in Chihuahua, Mexico, and the Implications for Regional Interaction
2:00 Margaret Nelson, Prehistoric Strategies of Land Use in Southern New Mexico: A Technological Approach

[62] Symposium: HISTORY AND PREHISTORY IN CENTRAL AMERICA: RECENT RESEARCH

MILAN
Organizer and Chairperson: William R. Fowler

Participants
2:40 Stephen Houston, Passions...Stamped on These Lifeless Things: The Histioriography of the Classic Maya
3:00 Paul E. Amaro and William R. Fowler, Ethnographic Models for Native Economy in Pacific Guatemala
3:40 Gloria Lara-Pinto, Indigenous Communication Networks in 16th-Century Honduras: The Ethnographic Evidence
4:00 John W. Hoopes and Geoffrey G. McCafferty, Out of Mexico: An Archaeological Evaluation of the Migration Legends of Greater Nicoya
4:20 Silvia Salgado, Funerary Patterns of the Middle Polychrome Period in the Southern Sector of Gran Nicoya
4:40 Ricardo Vasquez, Demographic Profile of a Late Precontact Population of the Central Highlands of Costa Rica

[63] Symposium: CRM IN THE 1990’S

VIENNA-STRASBOURG
Organizer: Peter S. Miller
Chairperson: Diane Gelbord

Participants
1:00 James J. Hester, The Role of Archaeological Site Preservation in CRM
1:30 Kent A. Schneider and M. R. Beckes, Reinterment in the Real World: Making it Work
1:50 Diane Gelbord, Technology, People and the Future of CRM in the Soil Conservation Service
Saturday Afternoon, April 8

2:10 Evan L. DeBoois, Cultural Resource Management in the USDA Forest Service: The Second Twenty Years
2:30 Mark A. Mathis, The Future of State Archaeology in North Carolina: A Prognosis
2:50 George Smith, Yeletta Canouts, Francis P. McManamon and Richard C. Waldauer, The Current and Future Archaeological Assistance Program
3:10 John G. Douglas, Why Not Manage Cultural Resources?
3:30 J. Ned Woodall, SOPA and NARST: Acronyms Without Acronyms for the 1990’s
3:50 James J. Miller, CRM 2000
4:10 Bruce Rippeteau, Steven Smith, Glen Hanson and Chris Amer, The 10-, 100-, and 1000-Year Future of American CRM: A South Carolina View

[64] Symposium: EARLY PALEOINDIAN ECONOMIES OF EASTERN NORTH AMERICAN PREHISTORY

GRAND BALLROOM B
Organizer and Chairperson: Kenneth B. Tankersley

Participants
1:00 Jay Custer and Michael Stewart, Paleoindian Adaptations and Lithic Resource Use in Northeastern North America
1:20 Michael J. Shott, Stone Tools and Economics: A Great Lakes Paleoindian Example
1:40 Chris J. Ellis, Lawrence J. Jackson and Heather McKillop, Approaches to Paleoindian Economy: New Theoretical Directions for the Southern Great Lakes Region
2:00 Donald R. Cochran, Kris D. Richey and Lisa A. Maust, Early Paleoindian Economies in the Glaciated Regions of Indiana
2:20 Kenneth B. Tankersley, I Would Rather Be Here Than Out On The Tundra
2:40 Albert C. Goodyear, Trends and Patterns in Paleoindian Research in the Southeastern United States
3:00 Peter L. Storck and John Tomenchuk, The Function and Significance of an Early Paleoindian Cache of Informal Tools at the Udora Site, Ontario
3:20 Barry L. Isaac, Defining the Economy for the Study of Early Paleoindians

[65] Symposium: ARCHAEOLOGY AND THE GLOBAL CLIMATE CRISIS

North Wing, East
Organizer: James A. Bell
Organizer and Chairperson: Joel Gunn

Participants
4:00 Joel Gunn, Global Climatic Change and Archaeology: Years of Future Past
4:20 James A. Bell, Social Visions and the Making of Decisions in the Global Habitat
4:40 Carole L. Crumley, The Role of Regional-Scale Analysis in Climatic Change
5:00 Pekri Hassan, Geoarchaeology of Nile Floods and Global Climatic Change

[66] Symposium: NEW DIRECTIONS IN EUROPEAN PREHISTORY

DUSSELDORF
Organizer and Chairperson: Sandra Olsen

Participants
1:00 Olga Soffer, Social Transformation at the Middle-Upper Paleolithic Transition: The Implications of the European Record
1:20 Sandra Olsen, A Theoretical Approach to Upper Paleolithic Horse Hunting Strategies at Solstre, France
1:40 Pamela Vanderfer, Martin Oliva and Olga Soffer, The Manufacture and Use of a Paleolithic Female Figurine from Dolni Vestonice, Czechoslovakia
2:00 Patricia Rice, Human Images on Cave Walls and Bone: An Empirical Comparison
2:20 Paola Villa and Eric Mahieu, Taphonomy and French Archaeology
2:40 Pat Shipman, Sardina’s Earliest Immigrants and Their Impact on the Indigenous Fauna
3:00 Randolph E. Donahue, Settlement, Seasonality, and Site Function in the Italian Final Epigravettian

Saturday Afternoon, April 8

3:20 Steven Kuhn, Diversity Within Homogeneity: Alternative Perspectives on Mousterian Assemblage Variability

[67] General Session: PALEODIET AND STABLE ISOTOPES

DUSSELDORF
Chairperson: D. Gentry Steele

Participants
4:00 Kristin O. Sobolik, Vaughn M. Bryant, Jr. and D. Gentry Steele, Palaeonutrition: The Necessary Integration of Disciplines
4:20 Renee A. Robinson, Margaret J. Schoeninger and Matthew L. Murray, The Tale the Fines Trees Knew: Stable Isotope Analysis of European Plants
4:30 Christian Medaglia, Elizabeth A. Little and Margaret J. Schoeninger, Late Woodland Diet on Nantucket Island (Massachusetts): A Study Using Stable Isotope Ratios
4:50 C. Britt Bousman, L. Scott, N. J. Shackleton and J. C. Vogel, Pollen, Stable Isotopes and Paleoenvironmental Reconstructions in Africa


FAVETTE-NEWTON
Chairperson: Mitchell T. Mulholland

Participants
1:00 Eleazer Hunt, Late Woodland Settlement Patterns of Western New York: An Explanatory Model
1:20 Susan C. Prezuzan and Vincas P. Steponaitis, The Development of Late Woodland Settlement Patterns in Central New York: New Evidence From the Bola site
1:40 Sarah W. Neusius, Protohistoric Hunting Strategies in Southwestern New York State: The Evidence from the Ripley Site
2:00 Phillip Neusius and Lynne P. Sullivan, In Search of the Erie
2:20 Susan D. Grzyskowski, A Reevaluation of Prehistoric Land Use Along the Outer Coastal Plain as Exemplified by Long Island
2:40 Frank Turano, The Long Island Environment: An Example of Contact Period Environmental Reconstruction and Exploitation
3:00 Barbara Anderson Calagero and Anthony R. Philpotts, Rhyolite as a Marker of Site Function
3:20 David Bernstein, Trends in Prehistoric Subsistence on the Southern New England Coast
3:40 Kenneth Feder, Prehistoric Occupation of Upland Habitat in Southern New England
4:00 Doug Kellogg, Paleoenvironmental Reconstructions and the Formation of Maine Coastal Settlement Patterns


LISBON
Chairperson: George L. Cowgill

Participants
1:00 William F. Rust, Olmec Settlement Evidence from La Venta
1:20 Veronica M. Kann, Late Classic Politics, Cloth Production and Women’s Labor: An Interpretation of Female Figurines at Matacapan, Veracruz
1:40 Arthur Joyce, Raymond G. Mueller and Marcus C. Winter, Drainage Basin Dynamics and Prehispanic Social Evolution in the Lower Rio Verde Valley, Oaxaca, Mexico
2:00 Elizabeth J. Misner, A Regional Analysis of Lithic Site Distribution in the Valley of Oaxaca
2:20 George L. Cowgill, Ruben Cabrera C. and Saburo Sugiyama, Some Implications of Mass Human Sacrifice at Teotihuacan, Mexico
2:40 Harry Ireland, Lithic Artifacts at the Teotihuacan Merchants’ Barrio
SUNDAY MORNING APRIL 9, 1989

[70] General Session: GREAT BASIN AND THE NORTHWEST

LISBON
Chairperson: Daniel O. Larson

Participants:
3:20 Richard E. Hughes; Mosaic Patterning in Prehistoric California—Great Basin Exchange
3:40 Andreas Novick; Lithic Inference and Patterned Redundancy at Gately Shelter, Nevada
4:00 R. L. Andrews, T. G. Whitley and James M. Aleviaccio; Perishable Industries from Lakeside Cave, Utah
4:20 Dennis E. Lewarch, Cheryl A. Mack and James R. Benson; Long-Term Land Use Patterns in the Southern Washington Cascade Range
4:40 Randall Schalk and Richard L. Taylor; Regional Land Use in the Cascade Mountains, Washington: Changing Strategies Through the Holocene
5:00 Peter H. McCartney; The Analysis of Prehistoric Settlement Systems in the Canadian High Arctic

[71] General Session: ARCHAEOLOGICAL THEORY

ROCKDALE-FORSYTH
Chairperson: Michael B. Schiffer

Participants:
1:00 J. Jefferson Reid; Critical Reflections on American Archaeology 1963-1987
1:20 Alice Pottinon, New Age Archaeology
1:40 Patrick Telsler; Archaeology and the Historical Sciences
2:00 Jon Muller; Chaos in Archaeology: Promises and Cautions
2:20 Frances R. Pickin; Holocenic Analysis of Archaeological Data
2:40 Robert T. Beggins; Anthropological General Theory and the Upper Paleolithic Transition
3:00 John Doershuk and John P. Hart; Landscape Utilization: An Evolutionary Perspective
3:20 Richard W. Redding; Subsistence Security as a Selective Pressure Favoring Increasing Cultural Complexity
3:40 Ewa Wasilewska; Archaeology of Religion; Colors as Symbolic Markers Dividing Sacred from Profane

[72] Symposium: ECOLOGICAL RELATIONS AND SOCIAL FORMATIONS IN ARABIAN PREHISTORY

VIENNA-STRASBOURG
Organizers and Chairpersons: Christopher Edens and Maurizio Tosi

Participants:
8:00 Alison Betts; Prehistoric Desertic Adaptive Strategies in Eastern Jordan
8:20 Curtis Larsen; Palaeoenvironments and Settlement in Prehistoric Southeastern Arabia
8:40 Paolo Biagi and Renato Nisbett; Middle Holocene Maritime Adaptations on the Indian Ocean Littoral of Oman
9:00 Francesco Fedecli; Man-Animal Relations in Prehistoric Yemen
9:20 Juris Zarins; Arabian-African Contacts Across the Southern Red Sea
9:40 Maurizio Tosi; Types of Settlements and Economy of Arabia in Middle Holocene Times
10:00 Geraldina Santini; Social Evolution in Eastern Arabia According to Burial Data
10:20 Serge Cluzet; The Beginning of Oasis Life in Eastern Arabia: A Case Study from Hill U (UAE)
10:40 Christopher Edens; Water, Trade and Urbanism on the Littoral of the Arabian Gulf
11:00 Garth Bawden; Tayma and Commercial Ecology in First Millennium B.C. Arabia
11:20 William Lancaster; Tribal Formations in Bedouin Arabia
11:40 Discussants: Geoffrey A. Clark and Henry Wright

[73] Symposium: SETTLEMENT AND SUBSISTENCE IN SOUTHWESTERN ECUADOR

MILAN
Organizers and Chairpersons: Alfred H. Siemens and Patricia J. Netherly

Participants:
8:30 Carl Spath; The White-on-Red Horizon Reconsidered: Possible Implications of Post-Formative Settlement Changes around the Gulf of Guayas
9:00 Allison C. Paulsen; Prehistoric Environmental Change in Southwest Coastal Ecuador and Its Effects on Local Settlement Patterns
9:20 Maria Masucci and Elizabeth J. Reitz; Shell Beads and Shark Teeth: Utilization of Marine Resources During the Guagua Phase, Southwest Ecuador
9:40 Malory M. Peasall; Investigating Prehistoric Subsistence Change and Agricultural Intensification in the Jima River Valley, Manabi, Ecuador
10:00 James Zeidler; Towards a Regional Chronology for Northern Manabi Province, Ecuador: Chrono-Stratigraphic Evidence from the Jima River Drainage
10:20 Mary Jo Sutliff; Domestic Production of Small Copper Artifacts During the Milagro Culture Occupation at Penon del Rio (Guayas Basin)
10:40 Patricia J. Netherly; Feasts and Fancy Wares: Jambeli Ceremonial Middens from the Poza Santa Maria Site, Arenillas Valley, Ecuador
11:00 John E. Staller; Adaptive Strategies of Prehispanic Settlement Systems in the Lower Arenillas River Drainage, El Oro Province, Southern Ecuador
11:20 Alfred H. Siemens and Alastair Robertson; Wetland Landscapes of Lowland El Oro
11:40 Discussant: Karen E. Stothert

[74] Symposium: EXCHANGE, INTERACTION AND SOCIAL COMPLEXITY IN OCEANIA

NORTH WING WEST
Organizers and Chairpersons: Michael W. Graves and Terry Hunt

Participants:
8:00 Terry Hunt and Michael W. Graves; Some Methodological Issues of Exchange in Oceanic Prehistory
8:20 Patrick Kirch; Specialization and Exchange in the Lapita Cultural Complex of Oceania (1,500-500 B.C.)
8:40 Stephen Wickler; Lapita Exchange; Recent Evidence from the Northern Solomon Islands, Melanesia
9:00 Geoffrey Irwin; Colonization and Exchange from Lapita to the Kula
9:20 John Terrell and Robert L. Welsch; Trade Networks, Areal Integration and Diversity Along the North Coast of New Guinea
9:40 Michael W. Graves; Terry Hunt and Darlene Moore; Ceramic Production as a Measure of Late Prehistoric Interaction in the Mariana Islands
10:00 Laura Junker; Trade and Social Complexity in the Philippines
10:20 Robert U. Bryson; Peer Polity Interaction on Pohnpei
10:40 Marshall Weisler; Towards Documenting Trade and Exchange in a Complex Chiefdom: An Essay in Method
11:00 Paul L. Cleghorn; Stone Adzes: Hard Commodities for Interaction Studies in the Hawaiian Islands
11:20 Barbara Withrow; Prehistoric Production, Distribution, and Use of Stone Adzes: Implications for the Development of Hawaiian Chiefdoms
11:40 Susan Dobyns; Perspectives from the Recent Past: Indigenous Social Stratification Systems in Culture Contact and Change
12:00 Discussants: Jim Allen and Timothy K. Earle

[75] Symposium: CURRENT RESEARCH IN LOWER CENTRAL AMERICA

LISBON
Organizers and Chairpersons: Jane Stevenson Day and Frederick Lange

Participants:
8:00 David C. Grove; Jade Use, the Olmec Question and Intero-Regional Interaction
8:20 Alice C. Tillet; Signs and Symbols of Preclassic Nicoya
Sunday Morning, April 9

8:40 Dorie Reents-Buder and Virginia Fields, Classic Maya Jade and Slate Artifacts from Costa Rica
9:00 Phoebe L. Hauff, Advances in Mineralogical Studies of Jade
9:20 Dana Leibsohn, Greater Nicoya Ceramics: Iconographies for Elite Interaction
9:40 Mark Miller Graham, The Sign of the Jaguar: Stone Sculpture and Inter-Elite Communication in Period VI, Lower Central America
10:00 Jane Stevenson Day, Shared Symbols: Greater Nicoya and Northern Mexico
10:20 Peter S. Briggs, Artistic Autonomy in the Central Region of Panama, B.C. 250-A.D. 1100
10:40 Frederick Lange, The Bay of Salinas—Coastal Crossroads of Greater Nicoya
11:20 Patricia Obando, Scanning Electron Microscope Analysis of Human Skeletal Material from Costa Rica
12:00 Discussants: Ronald L. Bishop and Doris Stone

[76] General Session: RESEARCH REPORTS—EASTERN WOODLANDS

DUSSELDORF
Chairperson: Teresa Rudolph

Participants
8:00 Carol A. De Mott, Rodney C. De Mott and Neal H. Lopinot, Archaeobotanical Analysis of a Burned Mississippiian Structure at Cahokia
8:10 Brian G. Redmond, Pots and Pans: An Examination of Ceramic Vessel Function and Early Maize Subsistence Practices in the Lower Ohio River Valley
8:20 Patrick E. Martin, Susan R. Martin and Lawrence L. Sutter, Piecing Together Copperworking Technology: Accretional Manufacturing at the Lac Labelle Site, Michigan
8:30 Michael B. Barber, Prehistoric Resource Utilization of the Blue Ridge: The Archaeology of the Jefferson National Forest
8:40 Craig T. Jr. Sheldon, John W. Cotter and Gregory A. Waselkov, Creek Archaeology on the Lower Tallapoosa River
8:50 Karl T. Steinen, A Reevaluation of William H. Sears’s Excavations at the Etowah Mounds, 1933
9:00 Dorothy Humph, Health, Demography, and Status in the Sixteenth-Century Coosa Chiefdom
9:10 Nina Borremans, Prehistoric Maritime Adaptations in the Cedar Keys

[77] Symposium: RECENT DEVELOPMENTS IN THE ARCHAEOLOGY OF THE ANDROSCOGGIN RIVER DRAINAGE OF MAINE AND NEW HAMPSHIRE

DUSSELDORF
Organizers and Chairpersons: Thomas R. Baker and James B. Petersen

Participants
9:40 Bruce J. Bourque, Steven Cox, Daniel Belknap and Thomas Lowell, Carey’s Garden: A Multi-component Archaic Site on Merrymeeting Bay
10:00 Nathan D. Hamilton, Late Woodland Occupations in Riverine and Coastal Southwestern Maine
10:20 Ellen R. Cowie, Recent Investigations in the Central Androscoggin River Valley, Maine
10:40 Patricia H. Baker, Robert I. Burnie and Thomas R. Baker, Preliminary Phase I Results of the HVDC Transmission Tie to Hydro-Quebec from South-Central Maine to the U.S.-Canadian Border
11:00 Thomas R. Baker and James B. Petersen, Preliminary Results of the Rumford Falls Project: Phase I Survey, Rumford, Maine
11:20 Corbett McP. Torrence and Patricia H. Baker, Archaeological Investigations Conducted in the Richardson Lakes Region of Interior Maine
11:40 Charles P. Paquin and Thomas R. Baker, The Cascade Falls Site: An Early Late Woodland Habitation Site Located in Gotham, New Hampshire

Sunday Morning, April 9

[78] Symposium: ARCHAEOASTRONOMY IN THE AMERICAS: TESTING THE HYPOTHESES

FAYETTE-NEWTON
Organizer and Chairperson: Ray A. Williamson

Participants
8:00 John Carlson, The Divine King: The Maya God C as the Personification of K’u-Divinity, Spirit and the Soul Residing in the Blood
8:40 David S. P. Deearborn, Observatories and Ceremonies in Tawantinsuyu
9:00 Patricia Essenpreis and David J. Duszynski, Astronomical Alignments at the Hopewellian Fort Ancient Site
9:20 James M. Heilman and Arthur F. Gosse, Sunrise at SunWatch
9:40 John White, The Sun Serpents: Two Fort Ancient Solstice Effigies
10:00 Carol Ambruster and Ray A. Williamson, A Possible Sunwatching Station in Davis Canyon, Utah
10:20 J. McKim Malville, Frank W. Eddy and Carol Ambruster, Astronomy at Chimney Rock, Southwestern Colorado
10:40 Charles Tom Hiksonson, Four Suns Wide: Calendric Investigations at a Tepanate O’odham Site
11:00 Discussant: Joseph Winter

[79] General Session: MAYAN ARCHAEOLOGY

NORTH WING EAST
Chairperson: Winifred Creamer

Participants
7:40 Richard Stallings, A Critical Review of Obsidian Trade Route Models for the Maya Area
8:00 Carlos Peraza, George J. Boy III and William M. Ringle, A Comparative Analysis of Late Classic Ceramic Complexes from the Northern Maya Lowlands
8:20 Richard Faine, Estimating Prehistoric Migration from Skeletal Age Distributions: A Case Example from Copan, Honduras
8:40 Bruce H. Dahlen and Kevin O. Pope, The Hydrological Regime in the Seasonal Swamp at El Mirador and its Implications for Intensive Agriculture
9:00 Edward M. Schortman and Patricia A. Urban, Craftworking Areas and the Development and Maintenance of Social Complexity in a Late Classic Southeastern Mesoamerican Polity
9:20 Anthony P. Andrews, The Fall of Chichen Itza: A Preliminary Hypothesis

[80] Symposium: OBJECTS, CONSUMPTION, AND MEANING

NORTH WING EAST
Organizer and Chairperson: Peter S. Wells

Participants
10:00 Timothy Kaiser, Production as Meaning: Pottery Making in Neolithic Southeast Europe
10:20 Michael Dietler, Barbarian Borrowing: Demand for the Erotic and the Political Economy of Early Iron Age Southern France
10:40 Melanie Wright, Imports and Construction of Cultural Identity
11:00 Peter S. Wells, Changing Attitudes Toward Objects in Late Prehistoric Europe
11:20 Joanna E. Ziegler, The Medieval Pieta: Sculpture or Fetish?
11:40 Steven R. Pederson, Trade and Consumption of the Massachusetts Bay Puritans
12:00 Marley R. Brown III, Strategies of Status Maintenance among Virginia’s First Families: The Symbolic Properties of Consumer Goods in Colonial and Post-Colonial Virginia

[81] General Session: OLD WORLD STUDIES

ROCKDALE-FORSYTH
Chairperson: Deborah I. Olzueski

Participants
8:00 Pamela Willoughby, The Nature of Variation Within the African Acheulean
8:20 Curtis Marean, Sabertooth Cats and Their Relevance for Early Hominid Diet and Evolution
ABSTRACTS OF SYMPOSIA

[1] COLUMBIAN CONSEQUENCES, PART II: THE ENTRADA INTO THE AMERICAN SOUTHEAST

Organized in three sessions, this is the second symposium co-sponsored by the Society for American Archaeology and the Smithsonian Institution Press to anticipate the 1992 Columbian Quincentenary. This three-year series of symposia explores the strategic diversity evident during the early colonial period in the Spanish Borderlands. Participants—including archaeologists, historians, Native Americans, geographers, and art historians—examine the Spanish strategies employed and the diverse Native American counter-strategies that evolved to cope with European intrusions. Papers will also evaluate the success and relevance of contemporary archaeological inquiry into European/Native American interaction in the Spanish Borderlands.

[2] MIDDLE PALEOLITHIC ADAPTATIONS IN EURASIA: REGIONAL PERSPECTIVES

The debate concerning the interpretations of Mousterian assemblage variability is one that has been taught to an entire generation of American archaeologists. New data and methods are now changing the traditional theories, and the current view sees the Mousterian as being much more complex than previously thought. The focus of this symposium is to present major overviews on regional variation in the Middle Paleolithic, based on the most recent excavations in the Western Old World. Major themes stress regional typological, technological, and raw material variability, environmental factors, and inter- and intra-site activity differences. This symposium is organized jointly with Middle Paleolithic Adaptations in Eurasia: Topical Overviews.

[3] REGIONAL PERSPECTIVES IN SOUTHEAST ASIAN ARCHAEOLOGY

Archaeology in Southeast Asia is so recent that only a few regions have chronological sequences. Often a sequence is based on a single site. Yet prehistoric research in the area is addressing issues far beyond chronology. The data emerging and interpretive approaches used promise to contribute to the general discipline of archaeology, even if our data may be less comprehensive than other parts of the world. This symposium will present a diverse array of research efforts by archaeologists working in Southeast Asia who seek to comment on diachronic or synchronic patterns in the region's prehistory.


Lowland Mesoamerica presents specific environmental conditions which are shared throughout the region. A comparison of lowland households from the Pacific piedmont, Gulf coast, northern Yucatan, Belize and Guatemala provides an opportunity to explore these similarities. Research on the different cultures of the lowlands relies on a diverse base in order to reconstruct the ancient economic systems and this symposium brings together ethnographic, ethnohistorical, and archaeological studies in an effort to better understand the basic economic unit of lowland Mesoamerican societies.


The Woodland Period in eastern North America is dominated by development of tribal societies and the Ohio Valley contains some of the best evidence for this evolving complexity. This symposium compares general patterns of adaptation in the Mid-Ohio Valley and its main tributaries. The Ohio River presents different resource sets, ecological risks, and interactional costs from those of its main tributaries, and their relative effects on cultural development are examined. Differences in settlement patterns, site structure, and material culture are highlighted and hypotheses concerning intraregional relationships within this riverine universe are constructed.


Recent research in the south-central Andes has provided an unprecedented opportunity to chart the evolution of domestic architecture in the region from the Archaic Period through Inka times. This symposium looks at the transformation of domestic architecture in three areas—the Osmore drainage, a major western valley, and the northern and southern portions of the Titicaca basin, and focuses upon ways in which models and explanations of changes in architecture and the organization of domestic space can be used to explore processes of ethnic and social differentiation, household organization, and the structure of activity performance and site utilization.

[7] EXCAVATING SHELL-BEARING SITES

In spite of over 100 years of investigation in shell-bearing sites we are only slightly closer to decoding the cultural and natural formation processes and human behavior encoded in them. Assumptions about shells and few methodological innovations for excavators of shell-bearing sites are responsible for this
Europe in the Fourth Millennium

situation. Middle range theory about maritime adaptation has in large part ignored these methodological issues. This set of papers make it abundantly clear what rethinking assumptions are and that strides in knowledge are linked to innovations in techniques. The presentations will benefit anyone who will work in a shell-bearing site.

EUROPE IN THE FOURTH MILLENNIUM

Food production spread throughout Europe over the course of at least a millennium. During this time foraging and farming were combined in a variety of ways as food production was adapted to specific social and environmental conditions. By the end of the fourth millennium, Europe was an intricate mosaic: relatively complex societies had emerged in some regions, while incipient farming systems were only beginning to appear in others. Papers in this symposium examine social and economic developments in the Balkans, Aegean, Iberia, Russian Plain, northern France, North European Plain, Denmark/Scandinavia, Alpine Foreland, and Ireland during the fourth millennium B.C.

SOUTH ASIAN ARCHAEOLOGY: RECENT RESEARCH AND NEW THEORETICAL PERSPECTIVES

Archaeological research in South Asia conducted over the past decades has considerably increased our knowledge of pre- and proto-historic and historic developments in this area of the world. In this symposium, results of recent work will be presented, along with theoretical models dealing with state formation, historic empires, and prehistoric social networks. Particular topics to be discussed include: prehistoric lithic procurement systems, the formation and structure of the Indus Valley Civilization, and the political, economic, and symbolic organization of historic empires.

CHANGING VIEWS OF CLASSIC MAYA POLITICAL ORGANIZATION

Classic Maya polities have long been of interest to archaeologists, who have sought for over fifty years to explain the composition and organization of Lowland polities. Yet the subject is still not well understood. Some scholars speak of "large-scale centralized polities," while others see only "decentralized city-states" or "feudal kingdoms." It is hard to imagine a more divergent set of opinions, and few seem to agree on which view is correct, or whether a particular model can be generalized to all areas of the Lowlands. This symposium presents new archaeological, epigraphic, and iconographic evidence of Classic political organization. Its goal is to represent diversity of opinion, yet at the same time to move towards consensus on a fundamental problem in American archaeology.

ZOOARCHAEOLOGY IN THE POST-PROCESSUAL AGE: IS THERE A PLACE?

The great boom in the development of Zooloarchaeology in the last 20 years has been stimulated by the demands on method made by the research paradigm often labeled either "new" or "processual" archaeology. An explicit view of culture as an adaptive system required monitoring biological variables in the records of ancient behavioral systems. Now the ecological and explicitly scientific emphasis of this familiar archaeology is being challenged by a potpourri of new post-processual approaches which emphasize historical, symbolic, ideological, and political factors. This symposium addresses the postzoologicalists can play in these new developments.

THE ARCHAEOLOGY OF GARDEN AND FIELD

Fields and gardens are increasingly becoming the subject of archaeological investigation by practitioners in several disciplines and theoretical schools. Landscape archaeologists use evidence at a variety of scales, from the regional to the microscopic, to learn how people used the land for pleasure and provender. The papers presented here focus on the identification and analysis of gardens and fields as loci of these activities. This symposium aims to give gardeners working in different archaeological traditions and world areas the opportunity to exchange information on relevant methodological and technical approaches to the study of past gardens and fields.

THREE-DIMENSIONAL ARCHAEOLOGY: FINALLY A FRONTIER

Studies concerned with spatial patterning and formation processes in archaeology have, with some exceptions, been restricted to the identification and interpretation of features on a two-dimensional plane. Although this simplification may sometimes be necessary and appropriate, archaeological deposits are accumulation phenomena that develop through complex processes both in the horizontal and vertical dimensions. Consequently, a full understanding and interpretation of the processes requires detailed examination of both methodological and technical approaches to the study of three-dimensional aspects necessary for developing a three-dimensional contextual framework for interpreting the data.

[26] MAYA SUBSISTENCE: ARCHAEOLOGICAL AND ETHNOBIOLOGICAL APPROACHES

Problem-oriented research and the use of specialized recovery techniques such as flotation in recent years by Maya archaeologists has led to the recovery of a diversity of prehistoric plant food and animal remains. Ethnobiology—which includes the study of modern, indigenous peoples' use of plants and animals—can provide a useful interpretative framework for ancient food remains. In this symposium, various archaeological and ethnological studies of Maya diet are presented. These studies provide new perspectives on ancient Maya agriculture, the ancient landscape, and use of wild plants and animals.

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WOMEN AND PRODUCTION IN PREHISTORY

This symposium explores the potential of using an explicitly feminist social theory in archaeological research and interpretation by applying gender categories to familiar and original sets of archaeological data. This approach goes beyond finding men and women in the archaeological record, it sees gender as an issue of history and as rooted in the dynamics of material and human resources. Each paper shows how attention to gender dynamics can illuminate a broad spectrum of issues concerning production in prehistory. The application of this perspective is seen to radically reframe both archaeological theory and evidence.

RETHINKING THE TERMINAL ARCHAIC-WOODLAND PERIOD TRANSITION IN THE NORTHEAST

This symposium addresses a period of prehistory that witnessed increased complexity among hunter-gatherer populations in northeastern North America. The Terminal Archaic and early portions of the Woodland period have been long characterized as a transitional era from nomadic hunter-gatherer adaptations to more sedentary incipient cultivator patterns across much of the region. Environmental fluctuations and apparent changes in human population densities have been correlated with notable mortuary ceremonialism and long distance exchange networks ca. 1,500 B.C. to A.D. 300. Individual contributions employ reanalyzed and recent data from the region to refine one or another aspects of prevailing models about this period of putative transition.

ADVICE AND DISSENT: AN EXCHANGE OF VIEWS ABOUT ARCHAEOLOGICAL ISSUES CONFRONTING THE 1990'S

This symposium will involve extemporaneous discussion by the participants of issues of relevance to the discipline of archaeology, with special emphasis on assessment, redefinition or reaffirmation of intellectual orientation, direction, and methodology. Part I of the program will focus on the nature, scope and goals of archaeological investigation. Part II will be concerned with an evaluation of the conceptual tools and learning strategies with which archaeological goals are approached, as well as a discussion of the direction that the discipline may or should take in the future. Questions or comments from the audience will be encouraged.

COLUMBIAN CONSEQUENCES, PART II: THE IMPACT OF HISPANIC COLONIZATION IN THE SOUTHEAST AND CARIBBEAN

See Symposium [1].

SAA SPECIAL SESSION: OUR VANISHING PAST—THE WILLFUL DESTRUCTION OF A NATION'S HERITAGE

The Society for American Archaeology has undertaken a major project to examine the looting and vandalism of archaeological sites in this country and the consequent destruction of irreplaceable archaeological information. This symposium is an integral component of that project, and will be followed in May by a major working conference. Here, specialists in various aspects of the problem will provide information on the magnitude and dimensions of looting, its impact on the country's heritage, current legal and technical methods of protecting our data base, the role of public education in combating the problem, and what the SAA membership can and should do about the issue.

MIDDLE PALEOLITHIC ADAPTATIONS IN EURASIA: TOPICAL OVERVIEWS

The Middle Paleolithic is currently enjoying increased attention as new data and theories point to this period as being pivotal in the evolution of modern Homo sapiens and modern cultural behavior. This symposium explores some of the new kinds of questions that are being asked concerning Mousterian assemblages and their reflections of Neanderthian behavior, including the interpretation of typological variability, the nature of the subsistence base, curation, and the question of style and symbolism. This symposium is organized jointly with Middle Paleolithic Adaptations in Eurasia: Regional Perspectives.

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[27] National Forests in the South

This session will highlight the cultural resources, research and management activities within the National Forests of the Southern Region of the U.S. Forest Service. An overview of the evolution of the Cultural Resource program from its beginning in 1973 to its current status will be given. Other management concerns of Forest Service cultural resources specialists will also be discussed. Other papers will discuss research into lifestyles of Archaeological and Paleoindian peoples in eastern Kentucky, Georgia, Mississippi, North Carolina, and Arkansas. A discussant from the Arkansas Archaeological Survey will also provide an additional viewpoint of these papers.

[29] Ceramic Production and Distribution: An Integrated Approach

Production and distribution are interrelated components of all economic systems. Nevertheless, studies of pottery economics have typically considered one or the other in isolation. This symposium treats production and distribution as interacting subsystems of the broader ceramic system. The papers presented here offer regional perspectives on the economic organization of ceramic production and distribution. A range of archaeological methods is used to examine the interactions between production and distribution processes. The papers cover topics such as the role of exchange networks, the economic significance of ceramic types, and the impact of technological change on production and distribution systems.

[30] Archaeological and Seasonality

This symposium focuses on the study of ceramic production and distribution as integrated systems in the broader context of economic organization. Papers presented here address the role of exchange networks, the economic significance of ceramic types, and the impact of technological change on production and distribution systems. The symposium aims to provide a comprehensive understanding of the relationships between production and distribution processes and their impact on the broader economic context.

[31] Kalanga Ethnoarchaeology

The Kalanga Ethnoarchaeology Project has been studying the ceramic production and distribution systems of the Kalanga people in southern Africa. The project uses a range of qualitative and quantitative methods to examine the social and economic organization of ceramic production and distribution. Papers presented here address the role of exchange networks, the economic significance of ceramic types, and the impact of technological change on production and distribution systems.

[33] Coping with Site Loss: Southern Perspectives

This symposium focuses on the challenges of managing archaeological sites in the southern United States. Papers presented here address the role of exchange networks, the economic significance of ceramic types, and the impact of technological change on production and distribution systems.

[35] The Evolution of Complex Society in Early and Middle Formative Mesoamerica: New Evidence and Interpretations

During the past two years there have been over a dozen new archaeological projects exploring Early and Middle Formative cultures in eastern Mesoamerica (ca. 3,000 to 1,000 B.C.E.). These researchers have demonstrated that this period was one of rapid cultural evolution and surprising social complexity. New evidence on these early cultures shows the presence of specialized trade, economic specialization, and interregional ideological systems. This symposium will present the most recent evidence from excavations in Veracruz, Chiapas, Guatemala, and El Salvador. We will also interpret and discuss implications of these new findings for the theoretical debate on the evolution of early Mesoamerican civilization.

[36] Households and Settlements in the Mississippian Period

While the excavation and analysis of households and communities has for years been an important part of research on the Mississippian Period, a growing awareness of the explanatory potential of the domestic context is expanding our understanding of the variability in social and material adaptive strategies. The contributors to this symposium examine the basic economic and social units of Mississippian society, from diverse areas of the Eastern United States, by exploring the functional differences in domestic material assemblages, the relationship of farmsteads to larger-order communities, and organizational complexity within communities.

[38] Ethics in Professional Archaeology

While certain dilemmas have been widely debated in the past (e.g., "reburial"), there remains an array of issues that are likely to prove troublesome over the next decade. Focus is on the anticipated problems, including those created by federal and state statutes and procedures. To meet these challenges it is essential that these problems be defined and an appropriate stance proposed. An emphasis is placed on the need for a consistent ethic among archaeologists to create a united and effective professional body.

[39] Archaeometry in Action

The surge of scientific innovations of recent decades has greatly influenced the discipline of archaeology. Science-based archaeological research, often called Archaeometry, has gained steadily, using analytical techniques for cultural interpretation. New and improved archaeological studies are developed without the support of paleoenvironmental data, well calibrated radiocarbon dates, and aerial photostructural analyses. Archaeometry in Action will present a dozen analytical procedures that are currently being employed in archaeology to help resolve and explain archaeological problems and processes.

[41] Hunter Gatherer Mobility, Resource Transportation and Storage

Bringing consumers and resources together in time and space is a foremost problem to be solved by hunter-gatherers, and of considerable interest to archaeologists. Hunter-gatherer groups may move to the resource location, may collect the resource and transport it to another location, may collect and store the resource, or use them in similar combinations. This symposium considers the factors which may affect the efficiency of alternative strategies. Hypotheses generated from evolutionary theory are tested in case studies of plant, animal, and lithic material exploitation.

[44] Columbian Consequences, Part III: The Missions of La Florida

See Symposium [1].

[45] Corridor Studies in Contract Archaeology

Contract archaeological surveys of highways, power lines, and communications corridors have resulted in an immense "gray litter" of thousands of miles of reconnaissance surveys, hundreds of test excavations, and many data recovery projects around the country. This symposium offers an opportunity to explore the potentials and limitations of corridor studies to become a substantial data base for regional prehistoric history. This potential data base is promising, yet there could be more consensus as to how corridor studies are implemented, interpreted, and assessed.

[46] Village Communities in Early Complex Societies

Moving beyond the traditional research focus on large cities in urban and state systems, this symposium examines and synthesizes recent investigations of small communities in early complex societies of Mesoamerica and the Near East. Participants discuss the role of social and economic activities, performed by small communities, the nature and degree of village integration into regional networks, the utility and meaning of the concepts "urban" and "rural," and the larger implications of small site studies for the analysis of early complex societies.

[47] Applications of Mammalian Mortality Data for the Study of Prehistoric Human Predator Ecology

The theme of the symposium is the use of bone data in archaeological research on human/hominid predator ecology. Secure applications of bone data depend on a comprehensive understanding of the causes of variation in the age structure of death assemblages. Issues include seasonal and long-term demographic cycles that affect the age and sex of the sample, and the impact of predator strategies and prey mortality patterns. The pieces represent a diverse set of approaches, including mortality profile analysis, seasonality analysis, inter-specific predator comparisons, and palaeoecological studies of death patterns in contemporary mammalian populations.

[49] Archaeobotany Through Phytolith Analysis

Phytolith analysis has proven to be an immensely flexible and productive tool for investigating ancient and modern plant communities. The papers presented at this symposium include a wide range of phytolith applications, from analysis of diet to identification of specific crops to reconstruction of animal husbandry practices. Recent developments in phytolith extraction techniques have expanded the data recoverable from coprolites and pollen records, as well as from non-opal phytoliths. Ongoing research into the complex issues of phytolith identification and
[50] Paleoshorelines and Prehistoric Settlement

The evaluation of coastal archaeological sites is a complicated process involving collaboration between archaeologists and various natural scientists. It is of particular importance to understand how changes in sea level must be factored in: in many areas isostatic rebound must be added to the equation, and in the most complicated, co-seismic uplift, subsidence and tilts must also be evaluated and taken into account. The papers in this symposium examine both methods of arriving at satisfactory reconstructions and results in various areas.

[51] Culture Change and Variability in the Upper Paleolithic

The unprecedented pace of human cultural evolution which began with the Upper Paleolithic at around 35,000 years ago has been the subject of discussion for several decades. Recent approaches to the material culture of the Upper Paleolithic have shed new light on the nature of Upper Paleolithic innovation and continuity. This symposium will address both the change through time and the contemporary variability found in faunal exploitation and land use strategies, art and body ornamentation, lithic and bone antler technologies during the Upper Paleolithic throughout the Old World.

[57] The Fyrell Symposium: Humans, Diet, and Cultures—Interdisciplinary Approaches to the Study of Prehistoric Peoples

The Fyrell interdisciplinary session addresses several perspectives the composition and adequacy of past diets, interactions between nutrition and infectious diseases, linkages between the material culture and paleodemography, and the archaeological study of the adaptive significance of prehistoric and paleodemography. New techniques and research strategies that have clarified populations from several parts of the Americas. For example, research carried out by Florence Hyley Ellis on the dohondrochronology, pottery styles, and ceramics, Anna Florence Hyley Ellis's research correlating dendrochronology, pottery styles, and ceramics, Anna Florence Hyley Ellis's research correlating dendrochronology, pottery styles, and ceramics, and others have been published in the periodical.


Women have played a major role in the development of American Archaeology, especially in the Southwest and Mesoamerica. Their contributions have been numerous, varied, and important, e.g., Florence Hyley Ellis's research correlating dendrochronology, pottery styles, and ceramics, and others. The symposium examines the work of a number of these women, how women are recruited to Archaeology, and work within the discipline.

[59] Environment, Economy, and Society in the Khubur Drainage, Syria

In the thirteenth and fourteenth centuries B.C., the Khabur drainage of northeast Syria saw the emergence of a number of large walled cities that are identified in historic texts. The antecedents to these developments are the focus of this symposium which draws upon excavations and surveys of these sites and the dating from the sixth to fourth millennium B.C., and considers the economic and social adaptations to the riverine and steppe habitats as seen in the Beqaa basin and the remains of settlement. The papers in this symposium examine the work of a number of these women, how women are recruited to Archaeology, and work within the discipline.

[62] History and Prehistory in Central America: Recent Research

This symposium brings together recent archaeological and ethnographic research in Guatemala, El Salvador, Honduras, and Costa Rica. Collectively, the papers cover a broad time span from the Maya Classic (A.D. 250-900) through the Colonial period (1525-1821). Several common themes are addressed through diverse methodological approaches: the reliability of evidence, interaction, reconstruction of economic systems, social status, political organization, and contacts with greater Mesoamerica and Lower Central America. The papers in this symposium examine the work of a number of these women, how women are recruited to Archaeology, and work within the discipline.

[63] CRM in the 1990's

This symposium is intended for discussion of the method and theory of cultural resource management and of public policies that affect cultural resource conservation. Cultural Resource Management will be viewed from the perspectives of managers of programs that have significant impact upon the nation, region, or state. Topics will include: direction of agencies at the start of a new federal administration, meeting conservation goals, developments in rules, regulations, and guidelines, funding levels, employment trends, professional certification requirements, requirements for CRM professionals, academic archaeologists, and students; and predictions for CRM in the year 2000.

[64] Early Paleoindian Economies of Eastern North American Prehistory

This symposium treats "economy" as the mechanisms (production, consumption, distribution, and exchange) of human adaptation. Over the past 50 years, two dominant and competing models of early Paleolithic (11,500-10,500 B.P.) economy in eastern North America have emerged: specialized hunting and generalized foraging. Both models are predicated upon assumptions about the antiquity of humans in the New World, the behavior of modern hunter-gatherers, paleoecological reconstructions, and the temporal placement of large herbivore extinctions. This symposium evaluates these assumptions by identifying patterns in the exploitation and human settlement.

[65] Archaeology and the Global Climate Crisis

In the last five years, a scientific consensus has arisen that global warming due to the human pollution of the atmosphere is inevitable. The United Nations, the U.S. Department of Energy and Environmental Protection Agency, to name a few, have sponsored large workshops on the problem which will be attended by many disciplines. Archaeologists have been notably absent. Why is this obvious repository of information on human responses to the global climate change being ignored? This symposium addresses recent developments in archaeology that might make the data of archaeology more accessible to the global climate community.

[66] New Directions in European Prehistory

European prehistory has maintained a long-held reputation as the bulwark of typological classification. Work conducted by Francois Bordes and his predecessors established this sturdy foundation some forty years ago, but theoretically-oriented research aimed at understanding cultural processes has been slow to follow. The purpose of this symposium is to demonstrate that current research, particularly that conducted by American-trained archaeologists, is expanding into some extremely innovative areas. New approaches, technology, and information derive from other disciplines, as well as state-of-the-art archaeological theory, contributing to rapid advancements in European prehistory.

[72] Ecological Relations and Social Formations in Arabian Prehistory

Recent research in Arabia addresses three clusters of interests: 1) Arabia as the hearth of distinctive social, economic, and ecological adaptations to desertic conditions; 2) a circulator of materials, people, and ideas between the Near East and the Arabian peninsula; and 3) as a periphery to the agrarian centers of civilization. These interrelated themes reflect more general questions of human adaptation to desertic environments and of the dynamic relationship of such marginal areas to agrarian centers. The papers in this symposium present various aspects of these common problems in light of recent Arabian research.

[73] Settlement and Subsistence in Southwestern Ecuador

In recent years, there has been much new work on various aspects of Prehispanic southwest Ecuador. Settlement surveys have been carried out and important new sites have been found, especially within the uppermost valleys of the Nahua river. The papers in this symposium present new insights in all of these respects. It brings together young professionals and seasoned scholars, a group within which there is already a good deal of interchange.

[74] Exchange, Interaction and Social Complexity in Oceania

In the past decade, archaeologists working in Oceania have made considerable advances in the identification of prehistoric exchange, often involving the transport of a variety of commodities over sizable ocean distances. At the same time the role of exchange in the evolution of social complexity has received considerable attention, especially among the stratified societies with craft specialists. This symposium brings together researchers working throughout Oceania in both modern and ancient contexts to examine commodity exchange, group interaction, and societal evolution.

[75] Current Research in Lower Central America

Current research in the Lower Central American region is advancing on two innovative fronts: 1) the application of instrumental analysis to archaeological data (remote sensing, neutron activation, X-rays, S.E.M. techniques) and 2) the combined application of archaeology, art history and technology. Research in these areas is directed towards a better understanding of the social implications of aesthetic development and iconographical systems. Papers will focus on ceramics, stone, metallurgy, jade and
mortuary practices and will evaluate the stylistic evidence for indigenous development and external influences (Central Mexico, Maya, Olmec) in this intermediate region.

[77] RECENT DEVELOPMENTS IN THE ARCHAEOLOGY OF THE ANDROSCOGGIN RIVER DRAINAGE OF MAINE AND NEW HAMPSHIRE
Archaeological data recovered from recent investigations in the Androscoggin River drainage of Maine and New Hampshire allow us to refine our models of aboriginal occupation and utilization from the interior montane uplands to the coastal lowlands. The papers included in this symposium will present new information for the entire aboriginal cultural sequence from the Paleoindian through Late Ceramic and Contact periods as well as address questions of local and regional importance such as settlement pattern, subsistence strategies, and intra- and interregional trade and exchange.

[80] OBJECTS, CONSUMPTION, AND MEANING
Lively interest is developing in many different disciplines in the social meaning of manufactured objects. Archaeology can make special contributions to the ongoing discussions because of archaeologist’s concern for understanding the production and use of an object in its full cultural context, and because of the unique time depth with which archaeology deals. The papers present case studies selected from a variety of different contexts to illustrate the kinds of social meanings that people ascribe to the objects they make, acquire, and consume.

ABSTRACTS OF PAPERS

Abel, T. J. (see Stothers, D. M.) [19]
Abrams, Elliot (Ohio)
[5] EARLY WOODLAND SETTLEMENT PATTERNS IN THE HOCKING RIVER VALLEY, OHIO
A model of settlement during the Early Woodland period in southeastern Ohio is considered. First, the Boudinot site, an open-air hamlet, is described. These and complementary data suggest that hamlet occupation was seasonal and dynamic yet spatially restricted to local mounds. Then, the Armitage Mound, one in a large concentration of mounds, is described. These new data suggest that this mound was the locus of recurrent activities by specific clusters of hamlets, reflecting the growth of territorially-distinct social corporate groups. This preliminary model is compared with others from the region.

Adams, Richard E.W. (Texas-San Antonio)
Rio Azul data bearing on Classic Maya politics best fits a sequence of Late Preclassic “principalities” giving way to regional states. Comparative data from field archaeology, epigraphy, ceramic analysis, and rank-size urban analysis are cited. A uniform model does not seem appropriate for all Maya regions.

Adler, M. (see Lipe, W.) [12]
Advasio, J. M. (see Hyland, D.) [19]
Advasio, J. M. (see Andrews, R. L.) [70]

Aber, Steven R. (Illinois State Museum)
Excavations performed in 1985 at the Hansen Site in eastern Kentucky focused on a buried paleosol containing evidence of Middle to Late Woodland occupation. Features and structures yielded radiocarbon dates between 300 and 600 A.D. Analysis of the diagnostic cultural material, features and structures, and non-diagnostic material classes suggested two periods of occupation, both of which were assigned to the Newtown phase. An overview of the material culture, chronology and internal site structure of the Hansen Site is presented, and some inferences are drawn regarding changes in internal and external relationships during the Newtomt phase.

Albright, David (MacDonald College-McGill)
[36] PRECISION OF SEASONALITY DETERMINATION IN RINGED SEALS (PHOCA HISPIDA)
Ringed seal (Phoca hispida) remains form an important part of many arctic middens. Examination of teeth from this species is often used to approximate season of death and therefore time of occupancy of a site. To measure repeatability of perception of layer type forming at the edge of either dentine or cementum, seven readings of each tooth from a sample of several hundred were made. The data were from a modern kill for which the date of death was known. Results suggest that examination of teeth for seasonality determination can be highly subjective.

Albright, D. (see Savelle, J. M.) [30]
Aldenderfer, Mark S. (Northwestern)
[6] ARCHAIC PERIOD DOMESTIC ARCHITECTURE FROM THE OSMORE BASIN
Excavations at Assam, a deeply stratified open air site dated from approximately 10,000-3,000 B.P. in the high sierra of the Osmore basin, have provided a unique perspective on changes in domestic architecture throughout the Archaic Period. This paper describes domestic architecture at four "instants" of time—8,800-8,600 B.P., 7,000-6,000 B.P., 5,000-4,500 B.P. and 4,000-3,600 B.P. —and discusses the meaning of changes in the organization of space, activity performance, and community structure observed throughout the Archaic.

Allen, Jim (La Troube) [Discussant 74]

Allen, Kathleen M. (Tulane)
[29] CERAMIC MANUFACTURE AND DISTRIBUTION AT THE HOUSEHOLD LEVEL: THE IROQUOIS
The production and distribution of domestic ceramics at the household level is examined. Ceramics from several middens at one Iroquoian village site are investigated for patterning of form and style that support hypotheses of household production. Evidence for other aspects of production including seasonality and compatibility with other activities is presented. The number of female producers...
within each lighthouse and for the village as a whole are estimated. The implications of these production variables are discussed in relation to distribution at the household level.

**Amaral, Paul E. and William R. Fowler (Vanderbilt)**

[62] ETHNOHISTORIC MODELS FOR NATIVE ECONOMY IN PACIFIC GUATEMALA

Recent ethnohistoric research on the principal ethnic groups of Pacific colonial Guatemala (the Quiche, Tzutujil, Cakchiquel, Xinka, and Pipil) has produced a wealth of data on native economy. The Conquest-period Pipil of El Salvador, for example, had a vibrant system of regional interaction that moved both staples and luxury goods through a system that linked coastal and interior settlements. From analysis of the ethnohistoric data, models are constructed that help clarify and explain aspects of the archaeological evidence on Pre-Columbian economy in the area.

**Amaral, P. E. (see Arroyo, B.)**[83]

**Ambrose, Stanley H. (Illinois)**

[81] RADIOCARBON CHRONOLOGY OF THE LATER STONE AGE IN EAST AFRICA

The date of the transition from the Middle to the Late Stone Age in Africa is considered to have occurred either around 40,000 B.P. or around 30,000 B.P. Charcoal from the uppermost Late Pleistocene Late Stone Age layers at Twilight Cave (Central Rift Valley, Kenya) has been dated to 35,800±550 B.P. The top of the Middle Stone Age horizon is two meters below this date, indicating the Middle to Late Stone Age transition took place well before 36,000 B.P. The context and associations of this date will be reassessed, and the continent-wide evidence for the Middle to Late Stone Age transition will be reassessed.

**Ambruster, Carol (Villanova) and Ray A. Williamson (Office of Technology Assessment (U.S. Congress))**

[78] A POSSIBLE SUNWATCHING STATION IN DAVIS CANYON, UTAH

The possible astronomical significance of a site at the town of Davis, California, is examined. It is located east of the canyonlands National Park on the north and south arms of a mesa overlooking Davis Wash. Situated about 50 meters above the plain, both structures are strategically located for observation of the sky and the terrain. Both could also have been used as sunwatching stations for various purposes. For example, one is on the ancient trail network and the other is near a prehistoric campsite. Both are well-aligned to the summer and winter solstices. Several hypotheses are explored and the social and political factors that may have been intentional are discussed.

**Ambruster, C. (see Malville, J. M.)**[78]

**Amer, C. (see Rippeteau, B.)**[63]

**Amick, Daniel (New Mexico)**

[8] ASSEMBLAGE AND FEATURE DIVERSITY AMONG THE KUNG: IMPLICATIONS FOR ARCHAEOLOGICAL STUDIES OF FORAGER SETTLEMENT SYSTEMS

Archaeologists often imply settlement characteristics from relative heterogeneity of artifact assemblages. Artifact diversity has commonly been related to type of occupation, organization of settlement system, length of occupation, and site reoccupation, as well as other aspects of site structure and occupational history. Relationships of artifact and feature diversity among Kung camps reported by Yellen (1977) are used to examine these variables so often used in interpreting hunter-gatherer assemblages. Organizational factors such as functional site types and group composition, and situational factors of resource structure and game encounter, have significant effects on diversity measures within foraging systems like the Kung.

**Andrews, Anthony P. (New College of USF)**

[79] THE FALL OF CHICHEN ITZA: A PRELIMINARY HYPOTHESIS

Maya chronicles attribute the fall of Chichen Itza to a revolt in which native Yucatec Maya overthrew the Itza and destroyed their capital. We have yet to identify the causes of the revolt, and the reasons for the Itza failure to maintain a strong state in the northern lowlands. The likely causes may have been an overexploitation of the internal economy of northern Yucatan coupled with the fact that the Itza capital was too far removed from its primary sources of economic power, which was based on a control of coastal resources and access to long-distance trade networks.

**Andrews, R. L., T. G. Whiteley and James M. Adovasio (Pittsburgh)**

[70] PERISHABLE INDUSTRIES FROM LAKESIDE CAYE, UTAH

Analysis of the collection of perishables from Lakeside Cave (42B0385). Utah indicates that four types of coiled basketry and five structural types of cording were made, used or discarded at this special activity locus. Multidimensional scaling of metric attributes of this assemblage as well as scrutiny of non-metric attributes indicate that it is possible to isolate microshifts within the perishable industries which may reflect either functional or, less likely, population based changes. Additionally, comparison of the Lakeside perishables to those recovered from nearby Hopug Cave (42B036) and Danger Cave (42T013) indicates that the population which exploited these sites throughout their coeval occupation were different. Specifically, it appears that while Lakeside and Hopug Caves were utilized by the same or very closely related groups, Danger Cave was visited by a different series of populations.

**Anthony, David (Hartwick)**


Between about 4,000 and 3,000 B.C. the Dnieper River was perhaps the most clearly defined cultural boundary in all of Europe. To the west were complex farmers living in substantial towns, practicing metallurgy and ceramic production; to the east, in a comparable environment, were simple incipient farmers still largely dependent on fishing and hunting, living in small hamlets without advanced pottery technology. This apparent ethnic boundary disappeared after about 2,700 B.C., to be replaced by different but equally significant cultural separations that followed ecological boundaries. The emergence of a recognizable Bronze Age "Barbarian Europe" was conditioned by this shift in cultural trajectories in the southwestern USSR.

**Arnold, Bettina (Harvard) and Egon Gersbach (Institut fur Vor- und Fruehgeschichte-Tubingen)**

[48] THE KARTOMAT: A FIELD DRAWING MACHINE

Drawing sectors and plans is one of the most time-consuming aspects of archaeological excavations. In a field where time is literally money, and excavators are often working only hours ahead of bulldozers, it is surprising that no apparatus has been developed in this country which would make the recording process more efficient. A drawing device of this type, developed in the late 1970's by Dr. Egon Gersbach of the University of Tubingen, has been in use in the field in Germany for the past decade and will be presented in this paper with Dr. Gersbach's cooperation. The author was fortunate enough to experience the efficiency of the Kartomat firsthand this past summer, and her impressions, together with slides of the apparatus in action, will be included in the presentation.

**Arnold, Dean E. and Alvaro Nieves (Whatabar)**

[29] FACTORS AFFECTING CERAMIC STANDARDIZATION

The notion of standardization in pottery production has recently been used as an indicator of ceramic specialization. Yet, this notion and the assumptions behind it are still largely untested. An attempt to identify some factors that affect the standardization of ceramic vessel shapes in Tucal, Yucatan is described. Approximately 1,600 vessels of 16 shapes were measured and analyzed statistically. Interpretation of these analyses within the ethnoarchaeological context of the workshop industry in Tucal provides a significant amount of evidence to support the hypothesis of a functional classification and a function of market, technique, the individual potter-producer, the family and the potter's own views of standardization. We suggest that the coefficient of variation should not supplant the use of the standard deviation as an expression of standardization.

**Arnold, Philip J. (New Mexico)**


Domestic industries were an integral component of many prehistoric household economies. The scale and intensity of these industries vary with a specific spatial or temporal implications for the organizational structure of residential activities. The material consequences of this organizational structure are explored, with special emphasis on the availability of space as a condition of refuse management. Ethnoarchaeological data are used to demonstrate that domestic disposal patterns vary in a predictable fashion as a function of effective housecut space. These findings underscore the need for an emphasis on residential activity area analyses within sendentary social systems.

**Arroyo, Barbara, Arthur Demarest, Paul E. Amaral, David A. Seiders, and Thomas L. Jackson**

[35] THE EL CARMEN SITE, EL SALVADOR: NEW INFORMATION ON THE EARLY PRECLASSIC OF SOUTHEASTERN Mesoamerica

Recent excavations at the El Carmen Site have uncovered the earliest village occupation and ceramics yet documented for El Salvador. The settlement dates to the Early Preclassic and has ceramics and artifacts similar to the Ocos culture of Chiapas, nearly doubling the known distribution of that culture.
The results of ecological, ceramic, and obsidian studies for El Carmen are presented that describe the nature of the occupation, its Ocos affiliation, and its significance for interpretations for Early Preclassic interregional contacts and cultural evolution.

Baker, Anna (New Mexico) and Michel Guilhaud (Direction des Antiquites de Paitou-Charentes) [51] THE SPATIAL DISTRIBUTION OF MICRODEBITS IN AURIGNACIAN AND CASTELLERONNIAN LEVELS OF ST. CESAre (CHARENTE MARITIME)

Analysis of microdebits from flint knapping experiments is combined with analysis of microdebits from sediment samples from Aurignacian and Castelleronnian levels at La Roche a Pierrot, Saint Cesaire (Charente Maritime). Spatial and temporal variation in microdebit characteristics is examined in light of spatial and temporal variation in debitage and retouched tools. The utility of microdebitage analysis as an added dimension in Paleolithic studies of chipped stone is presented in a methodological framework, and size formation processes relating to the spatial consideration of flint chips in cave and rockshelter contexts are explored.

Bailey, Douglas W. (Cambridge) [34] INVESTIGATING VALUE SOCIALLY IN THE PREHISTORY OF NORTHEASTERN BULGARIA

The Chalcolithic period in northeastern Bulgaria is well known for its fantastic finds of gold and spondylus grave goods in the Varna cemetery. This paper argues that the societies which produced such “sensational” finds may be examined along related and other dimensions, such as spatial patterning, display, consumption and disposal of material goods. Investigations along such dimensions allow one to create a more rigorous and critical interpretation of the fourth millennium B.C. society in northeastern Bulgaria.

Baker, B. F. (see Kealhoffer, I.) [55]

Baker, Barry W. and Brian S. Shaffer (Texas A&M) [43] HUMAN SUBSISTENCE BASED ON VERTEBRATE FAUNAL REMAINS RECOVERED FROM 4HR273 IN HARRIS COUNTY, TEXAS

Faunal remains recovered from an Early Ceramic hunter-and-gatherer site along the western margin of the Austrohipparion biotic province reflects a prehistoric subsistence strategy emphasizing large mammal exploitation, predominately deer. In addition, a large number of turtle remains recovered from the site suggest turtles represented an important dietary supplement. A total of nineteen individual genera were identified, including fish, reptiles, birds and mammals. This pattern of faunal utilization is in marked contrast to patterns documented for hunter-and-gatherer populations occupying the eastern margin of the Tamaulipan biotic province to the west.

Baker, Patricia H., Robert I. Birnie and Thomas R. Baker (Maine-Farmingtown) [77] PRELIMINARY PHASE I RESULTS OF THE HVDC TRANSMISSION TIE TO HYDRO-QUEBEC FROM SOUTH-CENTRAL MAINE TO THE U.S.-CANADIAN BORDER

Preliminary results are presented of the phase I survey of the 145-mile-long HVDC transmission tie to Hydro-Quebec. This transmission line extends from south-central Maine to the U.S.-Canadian border. The most interesting research aspect of this project is that much of the line parallels the Androscoggin River and crosses many of its tributaries. This has given us the opportunity to study the smaller, more ephemeral types of sites present in upland settings. A total of 37 definite or tentative sites have been located through the Contact and Historic periods.

Baker, P. H. (see Torrence, C. M.) [77]

Baker, James R. and James B. Peterson (Maine-Farmingtown) [77] PRELIMINARY RESULTS OF THE RUMFORD FALLS PROJECT PHASE I SURVEY, RUMFORD, MAINE

A phase I survey of the Rumford Falls project area flanking the Androscoggin River near Rumford, Maine has resulted in the identification of 25 archaeological sites. This portion of the Androscoggin River Valley exhibits much geological variability and very complicated stratigraphic sequences, making it necessary to use a combination of techniques to identify sites, including traditional test pit strategies and other forms of deep testing. Preliminary results of the study are presented and suggestions are offered on how to conduct surveys in similar riverine settings in the future.

Barr, Shirley Jo (Portland State) [40] BLOOD FROM STONES: BLOOD RESIDUE ANALYSIS OF THE DIETZ SITE CLOVIS ARTIFACTS

A method for analyzing blood residues on stone tools has been used on the Dietz site. The method, cross-over electrophoresis, was adapted for archaeological applications from its original use in forensic medicine by Margaret Newman of Calgary, Canada. The method has the potential to determine the type of animal, at approximately the family level, on which a stone artifact has been used. A brief explanation of the methodology and an overview of the results from the Dietz site artifacts is described. Problems encountered with the methodology and its potential for archaeology are also discussed.
Barton, C. Michael

[13] BURINS: TOOL OR TECHNIQUE?
A quantitative study of the morphology of burins from three Upper Paleolithic sites in southwestern Asia permits a reexamination of the functional significance of this class of lithic artifacts. Results suggest that “burining,” rather than being primarily a technique for creating grooving tools, may simply be an efficient means of altering flake or blade edges for a variety of purposes that include reshaping, blunting, hafting, and preparing microblade cores in addition to making “burins” in the classic sense. As burins are one of the most common Upper Paleolithic tool forms, this has important implications for interpreting assemblages.

Basa, L. A. (see Heckenberger, M. J.) [19]

Basa, L. A. (see Petersen, J. B.) [19]

Basset, E. J. (see Rogge, A. E.) [45]

Bemer, Brian S. (Chicago)

[42] ANDEAN MOEITIES: AN ARCHAEOLOGICAL PROSPECTIVE
The reproduction of dual systems of social organization at all levels of social hierarchies in the Andes, from rural communities to imperial realms, suggest that moieties systems are core principles of Andean society. The Late Inca social organization of the Pacaritambo region will be presented and will serve as an archaeologically and ethnohistorically grounded baseline through which the study of moieties and rural organizations can be extended into the Late Intermediate Period. In this way the study provides a means to examine the social organization of the area before the development of the Inca Empire.

Beckman, Garth (New Mexico)

[72] TAYMA AND COMMERCIAL ECOLOGY IN FIRST MILLENNIUM B.C. ARABIA
The Iron Age occupation at Tayma in northeastern Arabia is discussed as an important commercial center outside the political control of empire, but solidly within its wider economic sphere. Recent archaeological discoveries shed much light on Taymancite emulations of imperial power bases to further local elite interests, and on the fluctuating balance of power within the northwest Arabia. Presentation of this work in its historic context demonstrates the changing forms of imperial control over peripheral areas in response to changing conditions of interregional trade in a region of strict ecological limitations.

Beaudry, Mary C. (Boston)

[16] THE SPENCER-PIERCE-LITTLE HOUSE AND LANDS IN TIME AND MIND
The study of the Spencer-Pierce-Little property, approximately 230 acres of fields, marsh, and woodland in Newbury, Massachusetts, involves an integrated, interdisciplinary approach to changing land use over time. This paper presents the three phases of that approach and discusses how information derived from modern vegetation and landscape surveys, archaeological and aerial reconnaissance, documentary research, and remote sensing contributes to land use history of the site. This in turn is combined with the subjective element of local lore about the house and grounds and the people who worked and lived there. The resulting picture of changes in the perception of the land aids in interpreting the ways in which New Englanders created a mosaic of cultural landscapes that were at once utilitarian and symbolic.

Beck, Lane Anderson (Peabody Museum)

[55] ETHNIC BOUNDARIES AND THE COPENA MORTUARY COMPLEX
The Copena mortuary complex of northern Alabama was defined originally by a trait list of burial attributes. These attributes ranged from general factors such as burial in mounds to highly specific and rare traits like the inclusion of copper, red-gaped gorgets. Recent analysis of the 50 excavated Copena mounds has redefined Copena. The pattern of mortuary practices revealed through this research suggests that Copena incorporated two distinct sociocultural entities which were geographically separated, and that this approach utilized in this analysis may prove of use elsewhere in the identification of ethnic boundaries within the archaeological record.

Beckes, M. R. (see Schneider, K. A.) [63]

Bettcher, Robert L. (Maine)

[19] PREHISTORIC FISHING STRATEGIES IN EAST PENOBSCOT BAY, MAINE: THE KNOX SITE AND SEA-LEVEL RISE
The faunal remains of the Knox Site demonstrate a shift in fishing strategies in response to sea-level rise. Initial occupation occurred during the Early Ceramic Period (2,700-2,000 B.P.) when sea level was about two meters lower than today. Dominant fish include salmon, a mudflat dweller most easily harvested with a brush weir. The major occupation of the site occurred during the Middle ceramic Period (1,600-1,200 B.P.), with sea level near modern levels. The small number of faunal taxa, including salmon, is consistent with data from other Maine sites. Evidence of the occupation and abandonment of the site is suggested by rock and mudflat middens surrounding the Knox site during the Early Ceramic Period. The site was abandoned in the Middle Ceramic Period.

Beller-Cohen, Anna (Hebrew) and Ofir Bar-Yosef (Harvard)

[51] NON-ARTIFACT REMAINS FROM THE LEVANTINE UPPER PALEOLITHIC
In spite of considerable progress in the study of the Levantine Upper Paleolithic in recent years, certain aspects are still poorly known. Some of the rock blades and some of the microliths are well documented from both the desert regions and a few cave sites. However, aspects of subsistence and symbolic behavior are largely discussed by poor conditions of preservation in the arid zones and the fact that most caves were excavated in the 1930s. The available non-artifactual evidence from the Levantine cave sites (such as settlement patterns, ornaments, tools of ochre, and human remains) is explored in order to present new views concerning the understanding of local Upper Paleolithic cultures.

Belknap, D. (see Bourque, B. J.) [77]

Bell, James A. (South Florida)

[65] SOCIAL VISIONS AND THE MAKING OF DECISIONS IN THE GLOBAL HABITAT
Proposed solutions to global problems normally entail decisions to alter technology, economy, institutions, or life style. An unavoidable problem is to make long-range policy decisions within the parameters of individual rights and prerogatives. A policy making process is guided by different visions of man and social forces: the holistic and individualistic visions. The holistic approach gives minimal attention to individual rights and prerogatives, but risks compromising effective policy. An eco-social approach modifies some short coming of each, and is useful in archaeological theory as well.

Benson, J. R. (see Lewarch, D. E.) [70]

Benson, Robert (Georgia)

[21] LITHIC RAW MATERIAL FREQUENCY: AN INSIGHT INTO THE MOBILITY PATTERNS OF LATE QUATERNARY HUNTER-GATHERERS IN SOUTHERN SOMALIA
Archaeologists have proposed that changes in hunter-gatherer mobility patterns across the Pleistocene/Holocene boundary may relate to significant environmental changes. Recent research in Ethiopia and Somalia indicates that the environment changed from a cool and dry terminal Pleistocene climate to a warm and humid Holocene climate. The response to this change, hunter-gatherers hypothesized, has been a number of changes in the mobility patterns. The results of this research suggest that the pattern of changes in the mobility patterns is related to specific environmental changes. The results of this research also suggest that the pattern of changes in the mobility patterns is related to specific environmental changes.

Benne, B. F. (see Brown, J. A.) [39]

Bernstein, David (SUNY-Binghamton)

[63] TRENDS IN PREHISTORIC SUBSISTENCE ON THE SOUTHERN NEW ENGLAND COAST
The results of a long-term research project at the Greenwich Cove site in Rhode Island and data from other archaeological sites in the Narragansett Bay region suggest that subsistence practices there were gradually diversified and expanded over the last 3,000 years of the prehistoric period. Evidence for this trend is seen in faunal (vertebrate and molluscan) and macrobotanical assemblages, as well as regional paleontological and ethnohistorical records.

Bettinger, Robert L. (UC-Davis)

[71] ANTHROPOLOGICAL GENERAL THEORY AND THE UPPER PALEOLITHIC TRANSITION
The results of the four general theories of human behavior are not contrasting for attention in archaeology-cultural materialism, neo-Materialism, socioeconomics, and dual inheritance—only the last presents an explicitly evolutionary account of the distinctive human activities traditionally of interest to anthropologists. Predicted in that theory as resulting from specific modes of acquiring useful behaviors, social activities first appear in the Upper Paleolithic, suggesting a fundamental change in the organization of
Bleed, Peter and Christopher Schoen

Bishop, Ronald L. (Smithsonian) [Discussant 75]

Blackburn, P. (see Williamson, R. A.) [33]

Blackman, James (Smithsonian)

Bley, George H. (Ucla) and William M. Ringle (Davidson)


Survey and excavations at the site of Ek Balam, Yucatan, have shown it was one of the major Terminal Classic polities of the northern lowlands. This paper compares data used to argue for levels of political organization at other northern sites with their contexts at Ek Balam. Although Ek Balam may be characterized as a city state, the latter term encompasses a variety of forms requiring further refinement to be useful. We argue that the integration of lineages was one of the major processes involved in the evolution of Late Classic polities, and that the manner of their accommodation is reflected in the architecture, settlement patterns, and sculpture of Ek Balam.

Bey, G. I. (see Peraza, C.) [79]

Blackley, Robert L. and Richard Woodworth (Georgia State)

[19] SOCIOCULTURAL IMPLICATIONS OF MORTUARY PATTERNS AND PALEOPATHOLOGY AT A GLACIAL KAME SITE IN VERMONT

Results are presented of a bioarchaeological analysis of six-plus skeletons recovered in the 1960's at the Isle La Motte site in Vermont. Partially described by Ritchie in 1965, the remains consist of three intact and several cremated individuals with 'typical' Glacial Kame grave goods. Although the cremated remains exhibit postmortem cuts, they were not fleshed prior to burning. Radiographic analysis of two of the intact individuals revealed lesional activity clearly indicative of disseminated tuberculosis. The cranium of one evidences trephination associated with the lesions. Implications for Glacial Kame mortuary practices and social organization are discussed.

Blakeley, Donald J. and Kim N. Schneider (Wichita State)

[32] PREHISTORIC SOCIAL ORGANIZATION FROM DENTAL ENAMEL COMPOSITION: A PRELIMINARY STUDY

Prehistoric resident and other behavior can be analyzed using dental enamel composition. Trace elements in enamel reflect subsistence and geographic factors. Since most teeth form in childhood and are stable thereafter, enamel composition reflects childhood environment. In this study, energy dispersive x-ray analysis applied to permanent canines provides data on 11 trace elements in four prehistoric Arknec populations; the variance among adult men is much greater than for women and children. The total pattern indicates that males left their natal village after age 16. This pattern persists through the period covered in Deetz's classic study.

Blanton, Dennis B. (Center for Archaeological Investigations-Southern Illinois) and Frankie Snow (South Georgia)

[46] PALEOINDIAN AND EARLY ARCHAI OCCUPATIONS AT THE FERONIA LOCALITY IN SOUTH-CENTRAL GEORGIA

A rich record of Paleolithic and Early Archaic occupations has been recovered in south-central Georgia from the surface of sixteen sites lying within a compact four-square kilometers. In-depth analysis of the lithic assemblages from these sites has provided information greatly expanding our knowledge of early habitation in Coastal Plain Georgia and the Southeast at large. The density and diversity of artifacts and sites suggests that this area was a locus of population aggregation. This interpretation is supported through a discussion of toolkit composition, metric attributes, lithic raw materials, and comparisons with other contemporaneous assemblages.

Bled, Peter and Christopher Schoen (Nebraska)

[54] SALES OUT THE FRONT DOOR, REJECTS OUT THE BACK: PRODUCTION AND DEBRIS AT THE LINCOLN POTTERY WORKS

Excavation of the Lincoln Pottery Works—a firm that made domestic pottery in Lincoln, Nebraska from 1881 until 1904—produced a large collection of imperfect crockery. To investigate the relationship between this production debris and general patterns of Lincoln Pottery Works' production, the waster assemblage was compared with the assemblage of plaster models from the site and a collection of vessels bought from the factory. These comparisons show that both very simple and relatively complex vessel types are underrepresented in Lincoln Pottery Works' production debris. This research suggests some general principles for the analysis of production debris at ancient and modern industrial sites.
Brandt, Steven

settlement pattern information, stratigraphy, zooarchaeology, nearshore marine ecology, and natural history. Theoretical modeling is necessary to bring together diverse social and ecological variables to understand both strategy and impact of human actions in coastal settings.

Bosinski, Gerhard (Kola)

[2] MIDDLE PALEOLITHIC SETTLEMENT PATTERNS IN WESTERN GERMANY

Evidence from recently excavated Middle Paleolithic sites in Western Germany is reviewed in terms of the character of settlement patterns and the nature of activities undertaken on the sites. Several sites show evidence for repeated occupations, with distinct concentrations of lithic artifacts, and evidence for the movement of artifacts and raw materials between different sites or regions. In addition to "settlement" locations, there is evidence for specialized "kill" sites (e.g., Leithingen) and raw material extraction sites (e.g., Reuterdorf). Evidence for these features is best reflected at open-air sites, which allow a better separation of distinct episodes of occupation that more intensively occupied cave and rock shelter sites.

Bourque, Bruce J., Steven Cox (Maine State Museum), Daniel Belknap (Maine-Orono) and Thomas Lowell (Cincinnati)

[77] CAREY'S GARDEN: A MULTICOMPONENT ARCHAIC SITE ON MERRYMEETING BAY

Carbon-14 dates from sites the south bank of the Muddy River, an apparently insignificant stream that empties into Merrymeeting Bay. Its location is unusual in this region, several Archaic sites were encountered. The results of preliminary excavations are presented and various preliminary environmental reconstructions are proposed to explain the site's anomalous situation.

Bousman, C. Britt (Southern Methodist), L. Scott (Orange Free State), N. J. Shackleton (Cambridge) and J. C. Vogel (DEMAST, CSIR)

[67] POLLEN, STABLE ISOTOPES AND PALEOENVIRONMENTAL RECONSTRUCTIONS IN AFRICA

Stable carbon isotopes and pollen analysis provide an additional dimension for paleoenvironmental reconstructions in Blydfontein Basin, South Africa. Matching pollen spectra and d13C values from radiocarbon humate samples in geological contexts provide a finer grain analysis than using pollen or carbon isotopes individually. A second source of carbon isotopes, ostrich egg shell from an excavated rockshelter, provides greater paleoenvironmental resolution, and is directly associated with archeological materials. Along with assessing human dietary changes via stable isotopes, environmental fluctuations should be obtained and dated, especially in botanically heterogeneous areas or near isotopic ecomes, in order to eliminate background isotopic noise from dietary assessments.

Bowden, M. (see Mees, G. C.) [16]

Boyd, Jr., C. C. (see Boyd, D.) [55]

Boyd, Donna (Tennessee) and C. Clifford Boyd, Jr. (Radford)

[55] EFFECTS OF SUBSISTENCE AND TECHNOLOGICAL CHANGE ON MASTICATORY ANATOMY ACROSS A PREHISTORIC SKELETAL SAMPLE FROM TENNESSEE

Changes in subsistence from hunting and gathering to agricultural and in subsistence-related technology are well-documented across Archaic, Woodland, and Mississippian populations in Tennessee. Effects of these transformations are reflected in the cranial, mandibular, and dental anatomy of these skeletal populations. Similar cultural changes in other regions highly correlate with gracilization in these skeletal dimensions over time. Results of this study indicate reduction in some masticatory-related dimensions, however, some unexpected changes do not conform to this gracilization model. A revised, functional model which incorporates both cultural and biological factors is proposed.

Bradley, B. (see Lipe, W.) [12]

Brands, Steven (Florida)

[8] AN ETHNOARCHAEOLOGICAL STUDY OF FARMER, PASTORAL AND HUNTER POTTERY USE AND MOBILITY PATTERNS IN SOUTHERN SOMALIA

Archaeological studies often find it difficult to distinguish prehistoric farming from nomadic pastoralist or hunter-gatherer sites, particularly when stone artifacts, pottery vessels, and subsistence are the only remains recovered. A recent ethnoarchaeological study of pottery use in southern Somalia demonstrates that significant differences exist, in systemic archaeological contexts, in the type and number of pottery vessels utilized by synchronic/sympatric populations practicing different adaptive strategies. Implicate-

[NERD REDACTED]
tions for the identification of prehistoric modes of production, mobility patterns and the spatial distribution of material culture are discussed.

Burke, Ariane Michelle

[30] CEMENTUM INCREMENTAL STUDY OF EQUIDS
The results of a study of cementum increments are presented based on a control sample of modern horse using polarized light. The applicability of the method of cementum analysis to equids in general and more specifically to fossil equids will also be examined. The control sample comprised mandibular molar and premolar tooth series extracted from animals of known age and season of death. The samples were obtained from the New Bolton Center, University of Philadelphia Veterinary College, from June
Bushnell, Amy Turner

1988, until March 1989. Results are compared with a parallel study of cementum incremenatal structure in horse using scanning electron microscopy.

Burroff, D. B. (see Colten, R.) [34]

Bushnell, Amy Turner (South Alabama)


For the devout Spaniard the Conquest was legitimized by the fact that the natives of the New World were introduced to the salvation-giving sacraments of the Roman Catholic Church. It is argued that considerations of ritual, particularly of access to the sacraments, were what largely determined the patterns of Christian Indian subsistence and settlement in La Florida. The Spanish view that seasonal nomads and non-farming natives must be "reduced" to "regular" villages to live like Mediterranean peasants "under the bed of their doctrina" effectively limited Spanish hegemony to those regions where village-based agriculture was feasible.

C., R. C. (see Cowgill, G. L.) [69]

Caballero, Javier (UC-Berkeley)

[26] MODERN MAYA HOMEGARDENS

A study of 60 homegardens which were carried out in ten different villages from the Yucatan Peninsula, Mexico, shows that 83 different plant species are grown in the Maya homegardens. The plants provide food, medicine, and many other useful products which play an important role in modern Maya subsistence. A significant proportion of these species are wild or cultivated plants that probably were also important resources for the ancient Maya. Since the tropical forest is rapidly disappearing, modern Maya homegardens constitute a refuge for many species. Modern Maya homegardens provide important evidence and analogies for understanding ancient Maya subsistence.

Cabrera Valdes, V. (Ciudad de Mexico) and F. Bernaldo de Queiros (Centro de Investigaciones y Museo de Altamira)

[2] APPROACHES TO THE MIDDLE PALEOLITHIC IN NORTHERN SPAIN

Middle Paleolithic variability in Spain should be observed with reference to several points: site characteristics, the relevance of information, the chronological analysis involved and the interpretation of lithic assemblages and faunal remains. The most accurate information comes from cave sites, as they offer a greater spectrum of data. We also try to observe these aspects in comparison with certain Upper Paleolithic stages, keeping in mind that the Final Upper Paleolithic (Magdalenian stage) shows the highest specialization ratio.

Calagero, Barbara Anderson and Anthony R. Philpotts (Connecticut)

[68] RHYOLITE AS A MARKER OF SITE FUNCTION

Tools and flakes of non-local rhyolite and rhyolitic welded ash flow tuff, found in only a few site assemblages from the two river valleys of central Connecticut, provide useful markers of non-local lithic exchange. We propose that the earliest regional center for exchange is a large Middle Archaic period site in Farmington with an abundance of rhyolite and other non-local rock. This site functioned as a center for thousands of years before a second locus of exchange developed in the neighboring Connecticut Valley by the Terminal Archaic period. Following this, rhyolite importation ceased.

Campbell, Amy (Southern Methodist)

[24] THE SIGNIFICANCE OF MIDDLE PALEOLITHIC WATER WELLS AT BIR SAHARA IN THE WESTERN DESERT OF EGYPT

The discovery of Middle Paleolithic water wells in the Western Desert of Egypt represents the oldest known evidence of hydraulic manipulation by humans. These anthropogenic features, found at the Bir Sahara locale in the context of a Denticulate Middle Paleolithic site, clearly represent an adaptive strategy to cope with an area that was at least seasonally without running or standing water. Available evidence suggests a date of no later than the onset of the late glaciation. The ramifications to be considered in such a find include reevaluation of the paleoenvironment of this now hyperarid region, as well as the consideration that early humans were capable of a considerable antiquity of anticipating the need to maintain a dependable water source.

Canova, V. (see Smith, G.) [63]

Canova, V. (see Bishop, R. L.) [12]

Carr, H. Soraya

[52] PATTERN RECOGNITION AND CULTURAL STRATIGRAPHY: AN EXAMPLE FROM EAST TEXAS

The discrimination of cultural and noncultural formation processes is explored in terms of a multicomponent Archaic/Late Prehistoric site in east Texas. The site extends to a maximum length of 1.6 meters and contains substantial evidence of post-depositional reorganization from moldeworming as well as other processes. Exploratory analysis of debris categories such asdebitage, burned and unburned rock, and burned clay with multivariate statistical techniques (including cluster and factor analysis) provides a basis for identifying relatively less disturbed cultural strata from deposits which represent vertically and horizontally displaced materials into sterile layers. The interpretation reached through the analysis of debris compare favorably with the distribution of cultural features.

Carr, John (Maryland)


The ubiquitous Maya God C has been an enigma since it was first identified and discussed by Schellhas in 1904. It is argued that God C is usually identified erroneously with the North Star. Based on the discovery that San Diego de Landa's informant used the head of God C as the phonetic complement, k'u, in the glyph for the month Cumku in Landa's unpublished manuscript copy, it is proposed that God C functions both phonetically as k'u in Maya writing (ch'u in Cholan languages), and in its root meaning K'U, K'ul and Ch'Hul—the embodiment or personification of the Mayan concept of god, divinity and the soul. God C was employed in titles such as emblem glyphs by the Maya Lords to identify themselves as the divine descendants of ancestral gods through the direct inheritance of the Chi'ul soul or divine essence which resides in the blood. This is the real meaning of Maya bloodletting, blood sacrifice and sacrificial rites.

Carnean, Kelli (Pittsburgh)

[4] VESSEL FORM, STRUCTURE FUNCTION, AND SOCIAL ORGANIZATION AT SAYIL, YUCATAN, MEXICO

Household differentiation is investigated through the relationship of ceramic vessel form, structure function, and social status. The data suggest that different social groups perform qualitatively different activities, tasks and functions which are reflected archaeologically in different structure types and ceramic forms. The site-wide pattern of such differentiation is used to understand the social organization of the Terminal Classic (A.D. 600-1000) site of Sayil, Puuc Region, Mexico. Ceramic form data from structure-specific surface collections from the 1988 field season at Sayil forms the empirical basis of this research.

Carr, Bob (Dade County)

[33] DETERRENTS TO SITE VANDALISM IN URBAN SETTINGS: THE MIAMI EXAMPLE

 Destruction of archaeological sites in the urban setting is commonplace and often taken for granted as a social component of the changing cultural landscape. Often overlooked, however, is vandalism of sites in the urban setting and this does not have to be a part of urban change. Through progressive interaction with various publics, the Dade County historic preservation program has reduced site destruction threats from commercial expansion, vandalism and artifact collecting.

Carr, Christopher (Arizona State)

[14] CERAMIC TEMPER CHARACTERIZATION WITH RADIOGRAPHY AND PETROGRAPHY

Analysis of the temper in ceramic vessels is useful in studies of vessel function, chronometry, and exchange. Key variables, including the fractional volume of all temper particles or particles of certain mineralogical or size classes, particle size distribution, and approximate material/mineralogy can be estimated reliably from large volumetric samples using x-radiography. Analogies to BSEM mineral identification are discussed. Petrography provides more detailed mineralogical information but may not allow reliable estimates of any of the variables for large enough sample size. Dimensional analyses of Ohio Woodland sherd s illustrate this. The complementary uses of x-radiography and petrography provides a solution.

Carr, H. Soraya (Oklahoma Conservation Commission)

[26] PATTERNS OF EXPLOITATION AND EXCHANGE OF SUBSISTENCE GOODS IN LATE CLASSIC-EARLY POSTCLASSIC YUCATAN: A ZOOARCHAEOLOGICAL PERSPECTIVE

The ongoing analysis of faunal samples from Chichen Itza and Isla Cerritos, Yucatan, provides a picture of animal exploitation in two contemporaneous communities that differed in ecological setting and economic role. At both sites, the presence of non-local animal remains signifies the movement of
Carrell, Toni

subsistence goods between coastal and inland locations. More importantly, data as such anatomical part representation reveal evidence for specific characteristics of this exchange pattern, while also illustrating some of the methodological difficulties of documenting such exchange. This regional perspective on animal exploitation patterns contributes to our understanding of the overall economy of northern Yucatan.

Carrell, Toni (National Park Service)

[38] ETHICS VS. COMMERCIAL EXPLOITATION: WHAT'S IT WORTH TO THE FUTURE?

...a private archaeological contracting firm is approached, because of its in-house capabilities, to publish the results of several years work on a shipwreck site by a treasure salvage company. ...a state-sanctioned treasure salvage program requires that the contractor hire a professional archaeologist to conduct the project. The majority of the artifacts will be sold and the collection disbursed, although a "sample" will eventually be donated to a museum for a tax deduction. In the collection of even limited data about a site, or the dissemination of information from exploitative field work ethnically defensible? How will future generations evaluate our actions and what value will they place on the loss of these sites for personal, private, or corporate profit?

Chase, Philip G. (Pennsylvania)


It is difficult to determine how Middle Paleolithic peoples made their living, because different subsistence strategies may leave identical zooarchaeological records at the site level. Complete systems cannot be reconstructed because we cannot correlate different sites on a finer than geological time scale. However, lithic raw material analyses have linked sites to other locations in the landscape without requiring chronological correlation. The combined use of such analyses with faunal data permits inferences concerning patterns of human movement, of randomness versus specialization of activity, and of the functional equivalence or complementariness of sites in the Middle Paleolithic of southwestern France.

Cheever, Karen (Central Michigan)

[29] TRADITIONAL POTTERY PRODUCTION AND DISTRIBUTION IN SOUTH HIGHLANDS PERU: IMPLICATIONS FOR ARCHAEOLOGY

Villages in the lower valleys specialize in the production of containing and serving vessels, but do not produce the fire-resistant pots that high elevation villages make. Such village specialization of functionally complementary forms requires their distribution, assures interaction, and maintains interdependence between the two ecosities. Pots are exchanged for agricultural produce from both ecosities. The production occurs primarily during the dry season when conditions are more favorable, when such activities do not conflict with agricultural production, and when fairs occur. In Cuzco the family is the pottery production unit, men and women specializing in different forms, and intra-village distribution also occurs. Pottery enters a regional system of distribution through the fairs scheduled by a religious (Catholic) calendar.

Ciarla, Roberto (Istituto Italiano per il Ed Estremo Oriente), Andrew D. Weiss (MASCA-Pennsylvania) and Mauro Cremaschi (Centro di Studio per la Stratigrafia e la Petrografia)

[3] DEVELOPMENT OF SOCIAL COMPLEXITY IN CENTRAL THAILAND: COMMUNITY GROWTH AND CHANGE AT BAN THA KAE

Mapping, surface survey, and georearchological investigations along quarrying cuts at the site of Ban Tha Kae, a one square kilometer mound in central Thailand, have revealed the large-scale internal structure of a key site during the Pre-Iron, Iron Age, and Davaratavi periods. Preliminary analyses of the spatial distributions of cultural remains and georearchological features show growth in the overall size of the site, along with changes in the types of activities and contexts present during each period. These results show how a probable regional center evolved during the period of emerging social complexity bracketing the first millennium B.C.

Claassen, Cheryl (Appalachian State)

[7] THE INTERPRETIVE CRISIS IN SHELL MIDDEN ARCHAEOLOGY

Several assumptions and practices by archaeologists excavating shell-bearing sites seriously skew our interpretations. The failure to incorporate experimental and ethnographic research as research tools has likewise hampered interpretations still further limited by our experiences. In this paper I take issue with the standard assumption that all contexts should be interpreted on the basis of dietary debris, drawing on my observations in the Bahamas. The construction

Cleghorn, Paul L.

[74] STONE ADZE: HARD COMMODITIES FOR INTERACTION STUDIES IN THE HAWAIIAN ISLANDS

The stone adze was the most important woodworking tool in precontact Hawaiian society. Raw material for this important class of tools was non-randomly distributed across the island landscape, and was generally exploited in localized quarry locations. An argument is made that this limited resource was controlled by a developing elite and was used as a commodity in interaction spheres. A

objecting that sample sizes either excavated or analyzed are woefully inadequate for the task, and 3) specify that the methods of calculating mean values, seasonality and habitats are grossly simplistic.

Claassen, Cheryl (Appalachian State) [Discussant: 30]

Cleghorn, Stephen (Office of the State Archaeologist-North Carolina)

[38] SOMEONE IS ALWAYS GOING TO BE UNHAPPY WITH MY DECISIONS: A STATE ARCHAEOLOGIST'S PERSPECTIVE ON ETHICS AND PUBLIC ARCHAEOLOGY

Professional standards can be difficult to reconcile with public expectations about what SHPO staff archaeologists should be doing (or not doing) in any given case of archaeological resource protection. State Archaeologists often find themselves employing "archaeological triage" decision-making techniques, yet, despite what some critics think, decisions are never made in a political or ethical vacuum. Effective resolution of real-world problems of site protection or destruction demands ethical policies and professional archeological politics, plus media and public diplomacy skills. Stiffing levels, budget cuts, and moral support from fellow archaeologists are additional factors in the equation. Case studies from North Carolina illustrate some of the realities of balancing professional mores with political and economic development pressures.

Clark, Geoffrey A., John Lindly and Nancy R. Colman (Arizona State)


Any general explanation for modern human origins must reconcile fossil and archaeological evidence, and evidence from the biological and molecular biology. Levantine data are paradoxical in this regard since the Levant has produced alleged "morphologically modern humans" TL-dated at ca. 92,000 B.P. at Qafzeh in association with Mousterian archaeological assemblages indentical to those also found with alleged "neanderthals." Levantine Middle and Upper Paleolithic adaptations are outlined and contrasted in order to determine if there is any evidence for the discontinuity implied by the biological replacement model of C. Stringer, Bar-Yosef and others. The implications of biological replacement are discussed, along with issues in molecular biology. Biological replacement of archaic Homo sapiens with morphologically modern humans is not supported by the sparse fossil evidence, nor the abundant archaeological evidence. Biological replacement is also contradicted by all but one construal of the controversial mtDNA data.

Clark, Geoffrey A. (Arizona State) [Discussant: 73]

Clark, John E. (Brigham Young) and Michael Blake (British Columbia)

[35] THE EARLY FORMATIVE SEQUENCE AT CHIAPAS, MEXICO

The chronology and artifactual sequence for the Early Formative period on the Pacific coast of Chiapas, Mexico is described. The new radiocarbon chronology is based on 30 dates from recent excavations in the Rio Coatan region of southern Chiapas and recalibrations of 25 dates from previous research in the area. We outline a sequence of archaeological phases based on these dates and the recent analysis of the ceramic and artifact collections from our 1985 excavations. Special attention is paid to the ceramic typology and the evolution of early Formative ceramics in the context of emerging chieftainships.

Clark, P. (see Fitzhugh, W. W.) [50]

Clay, R. Berle (Office of the State Archaeologist-Kentucky)

[5] CHANGING ADENA MORTUARY PRACTICES

Building on an understanding of Adena mortuary practices developed from the excavation of the Kirk and Newman mounds and the Niebert mortuary camp at Gallipolis Lock and Dam, West Virginia, changes in mortuary practices through time are hypothesized. These draw on materials from later Adena sites in the Kanawha Valley, Kentucky, and the Mid-Ohio Valley. It is suggested that through time there is a wide spread development in the importance of fine age mortuary facilities. This trajectory of change is then related to patterns of Hopewellian mortuary practice which followed in the Ohio Valley.

Cleghorn, Paul L. (Bernice P. Bishop Museum)

[7] STONE ADZE: HARD COMMODITIES FOR INTERACTION STUDIES IN THE HAWAIIAN ISLANDS

The stone adze was the most important woodworking tool in precontact Hawaiian society. Raw material for this important class of tools was non-randomly distributed across the island landscape, and was generally exploited in localized quarry locations. An argument is made that this limited resource was controlled by a developing elite and was used as a commodity in interaction spheres. A
model, based on the size, date of use, and location of the quarries, is presented that predicts the flow of adzes in precontact Hawaiian society.

Cleland, Charles E. (Michigan State Museum) [Discussant 38]

Cleland, James (Dames and Moore)
[48] MULTI-STAGE RESEARCH IN THE SITTING AND ASSESSMENT OF LINEAR PROJECTS

Appropriate approaches to archaeological studies in support of the siting of linear projects remain an unresolved issue in historic preservation planning. There is tremendous variation from project to project and jurisdiction to jurisdiction in the degree to which archaeological information is factored into the initial identification of project alternatives. Similarly, approaches to the assessment of impacts along alternative corridors varies considerably. Controversies regarding the appropriate role of predictive modeling and sample surveys contribute to the lack of clear direction amongst professional archaeologists. Many archaeologists are only vaguely aware that the requirements of the National Environmental Policy Act are substantially different than those of the National Historic Preservation Act. The Geothermal Public Power Line project in northern California is reviewed as an example where a multi-stage archaeological research strategy, encompassing predictive modeling, sample survey, and intensive survey, was utilized at various planning stages. Using Geographic Information System provides improved ability to relate corridor level data to the understanding of regional settlement patterns.

Clements, H. S. (see Johnson, I. R.) [48]

Clermont, Normand (Montreal)
[19] WHAT DO YOU DO WHEN YOU ARE OUT OF BOUNDS? AN ANALYSIS OF ARCHAIC-WOODLAND PERIOD BOUNDARIES IN QUEBEC

Southern Quebec has recently provided new data which enable extensive discussion and revision of key taxonomic concepts in regional prehistory. These new data have been unexpected since few scholars have ever considered southern Quebec as a full participant in regional interaction networks in the Northeast. Some of these new data are summarized and a revised outline is given of the Late Archaic through Middle Woodland cultural boundaries for this region.

Cleuziou, Serge (CNRS)
[72] THE BEGINNING OF OASIS LIFE IN EASTERN ARABIA: A CASE STUDY FROM HILL (UAE)

Recent excavation in the Omani piedmont has demonstrated that oasis farming—an artificially created environment that includes sophisticated irrigation systems and creation of shade with palm trees—was already developed in eastern Arabia around 5,000 B.C. The aggregation of the multiple foreign cultivars that produced a subsistence system capable of sustaining not only local farmers but also a wider network of pastoralists, fisherfolk, and specialized producers (notably of copper) is investigated. The site of Hill is taken as an example of these critical transformations in the shaping of the Arabian way of life.

Cochran, Donald R., Kris D. Richey and Lisa A. Maust (Ball State)
[64] EARLY PALEOINDIAN ECONOMIES IN THE GLACIATED REGIONS OF INDIANA

Analysis of over 100 fluted points from central and northern Indiana has allowed the formulation of models for Early Paleoindian economic systems present within the till plain and lake and moraine regions of the state. Correlations between local chert sources and fluted points, together with locational analysis of fluted point sites, suggests differential patterning between the two regions and provides new data for interpretation of existing models of Early Paleoindian economies.

Colman, Nancy R. (Arizona State)
[81] REFINING THE LEVANTINE UPPER PALEOLITHIC

Recent interest in the Upper Paleolithic of the Levant has focused on the identification of two partially contemporaneous “traditions” or “techno-complexes”—the Ahmariyan and the Levantine Aurignacian. Criteria currently used to identify these lithic assemblage types, however, are less clearly defined and inconsistent in terms of their typological and technological features. Lithic data from Jordan are used to examine the validity and general applicability of these suggested assemblage types on a larger, pan-Levantine scale. A comparison of the two assemblage types is made in order to define more explicitly differences and similarities that are claimed to distinguish them.

Colman, N. R. (see Clark, G. A.) [24]

Colman, N. R. (see Barton, C. M.) [13]

Cowie, Ellen R.

Collins, James M. (Office of the State Archaeologist-Iowa)
[32] THE PERSPICUOUS ART OF PAPER ARCHAEOLOGY: A CAUTIONARY TALE

An exercise that began with a routine site records check for an Iowa Department of Transportation funded Cultural Resource Management project resulted in the documentation of a calamitous series of problems spanning the work of five generations of archaeologists. The consequences of fundamental recording errors, as reflected in published literature and the management of significant resources, is described. An object lesson is obtained in the need for vigilance regarding precise provenience data, and cautions against the continuation of the archaeological cold war.

Collins, J. M. (see Melcher, M.) [36]

Colten, Roger (Lompoc Museum), Daniela B. Bursini (Università di Siena), Randolph E. Donahue (SUNY-Stony Brook) and Christopher O. Hunt (Cambridge College of Arts and Technology)
[34] PALEOLITHIC RESEARCH IN THE FARMA VALLEY, TUSCANY, ITALY

Site survey in the Farma Valley has revealed a high density of late Pleistocene and early Holocene sites. Interdisciplinary research at one of these sites, Petroilo III South, has produced data that shed light on site formation, structure and function, as well as palaeoenvironmental conditions. Preliminary results of spatial analysis, palynology and sedimentology suggest a short term summer occupation by a small group of Mesolithic hunters and gatherers exploiting locally available jasper for maintenance of curated technology. These regional and site specific data can be used for evaluating settlement models for prehistoric central Italy.

Conkey, Margaret (UC-Berkeley)

Conrad, Geoffrey W. (Indiana)

Estuquina and San Antonio are two Estuquina-phase (A.D. 1200-1500) sites in the Osmore drainage. They lie within 15 kilometers of one another and share similar ceramic styles, mortuary patterns, and other characteristics. However, the domestic architecture at the two sites is very different in terms of the internal partitioning of individual house structures, subdivisions of the site, and overall community patterning. The domestic architecture of the two sites and its implications for household composition, site function, sociopolitical organization, and ethnicity are discussed.

Conrad, G. W. (see Rice, P. M.) [6]

Cordiller, Linda (California Academy of Sciences) [Discussant 18]

Cottler, J. W. (see Sheldon, C. T.) [76]

Cowgill, George L. (Brandeis), Ruben Cabrera C. (INAH) and Saburo Sugiyama (Brandeis)
[69] SOME IMPLICATIONS OF MASS HUMAN SACRIFICE AT TEOTIHUACAN, MEXICO

Until recently there was no evidence for large-scale human sacrifice at Teotihuacan. However, since 1982 multiple burials containing 40 individuals have been found on the south and north sides of the Temple of Quetzalcoatl. In 1988 more were found east of the pyramid, and a tunnel encountered multiple burials within the pyramid itself. By now about 80 individuals sacrificed when the pyramid was built are known, and the total is surely much higher. Most are males with rich military attire and warlike offerings. We discuss implications of these and other new finds for Teotihuacan warfare, religion, and politics.

Cowie, Ellen R. (Maine-Farmington)
[77] RECENT INVESTIGATIONS IN THE CENTRAL ANDROSCOGGIN RIVER VALLEY, MAINE

Survey and testing projects conducted between 1986 and 1987 along the margins of the Gulf Island head pond in the central Androscoggin River Valley provide data on riverine cultural adaptations during the Holocene epoch. Based on radiocarbon dated features and diagnostic artifacts the twenty-nine archaeological sites range in age from the Early Archaic period through many of the subsequent cultural periods in prehistory and history. Two stratified sites preserve a cultural sequence from 8,000 B.P. onward. Site locations, geomorphological settings, stratigraphy, cultural features, and artifacts are discussed to provide an overview of aboriginal occupation of the central Androscoggin drainage valley.

Cox, S. (see Bourque, B. J.) [77]
intensive and extensive study of the surface assemblage was performed in two of the localities. The results of both spatial and quantitative analysis are presented and compared with surface production assemblages reported for other areas in Mesoamerica. In addition, the case presented will be viewed from the perspective of different models developed for ceramic specialization.

Curren, Caleb and Keith J. Little (Alabama-Tombigbee Regional Commission) [1] CONQUEST ARCHAEOLOGY OF THE ALABAMA COASTAL PLAIN
Documentary evidence derived from sixteenth century Spanish explorations and colonization attempts provide intriguing bits of data concerning the socio-political organization and geopolitical boundaries of late Mississippian societies of the Alabama Coastal Plain. This paper integrates these documentary data with the archaological record in a synopsis of Alabama Coastal Plain late Mississippian political alignments.

Custer, Joy (Delaware) and Michael Stewart (Louis Berger and Associates, Inc.) [64] PALEOINDIAN ADAPTATIONS AND LITHIC RESOURCE USE IN NORTHEASTERN NORTH AMERICA
Continued research on Paleoindian cultures of Northeastern North America has generated a series of data which highlight the variability of Paleoindian adaptations. Lithic resource utilization patterns provide insights into this variability. Some raw material utilization patterns are similar throughout the zone. Other patterns indicate specific points of production and use in other aspects of raw material use that varied in time and site, tool kits, the locations of points, and local paleoecology suggest considerable variation in adaptations. A major difference is noted between the central Middle Atlantic and the New York-Eastern Canada-New England areas.

Dahlin, Bruce H. (Howard) and Kevin O. Pepe (TGS Technology Inc., NASA Ames Research Center) [79] THE HYDROLOGICAL REGIME IN THE SEASONAL SWAMP AT EL MIRADOR AND ITS IMPLICATIONS FOR INTENSIVE AGRICULTURE
Ground survey, excavation, and analysis of radar imaging from airborne, Seasat, and shuttle flights was performed to understand the hydro-dynamics of a seasonally inundated swamp or bajada adjacent to the large Maya site of El Mirador, Peten, Guatemala. Because large Maya sites are often situated near bajos, it has long been assumed that they were extensively farmed using raised field techniques. Our data show that the hydrological regime was not amenable to raised field cultivation without exorbitant labor expenditures and that it was not practiced here.

Dalan, Rinita (Southern Illinois-Edwardsville), William Eisinger (Cahokia Mounds State Park), George R. Holley (Southern Illinois-Edwardsville) and Melvin L. Fowler (Wisconsin-Milwaukee) [60] A RECONSIDERATION OF THE CENTRAL PALISADE AT THE CAHOKIA SITE
The Central Palisade at the Cahokia site has been the subject of archaeological investigations for more than 20 years. Recent research, combining remote sensing and excavation, has contributed to the understanding of this palisade, and there has been a reevaluation of the site. Implications of the timing of palisade construction with the gradual decline of the Cahokia polity and the placement of this feature in reference to natural and artificial topography are explored.

Dales, George F. (U.C.-Berkeley) [10] THE HARAPPA PROJECT AND THE QUESTION OF EARLY STATES
The concepts of “urbanism,” “civilization,” and “statehood” are subjects of conflicting hypotheses in the literature, especially concerning the ancient Indus Valley. Some scholars suggest that the Indus culture never was “urbanized”; others deny it the status of a major “civilization”; and recently the concept of an Indus “State” is being challenged. The Harappa Project is focusing on these questions through the investigations of a multi-disciplinary staff using modern data recovery and analytical methodologies. These issues are addressed in the light of the new research at Harappa.

Recent investigations of Middle and Late Woodland settlements in central Ohio have produced concrete data on questions of settlement pattern and human ecology. Excavations and survey data from sites on the east and Upper Scioto and Upper Licking counties are summarized along with a consideration of the bearing they have on the cultural changes of the 5th and 6th centuries A.D. From this work it appears that Middle Woodland communities lived in dispersed hamlets while Late Woodland communities aggregated in nucleated villages. Potential causes of this change (e.g., popul-
Davidson, Thomas E.

[50] THE HALAF-UBAID TRANSITION IN THE WADI DARA AREA

Excavation and survey data from chalcolithic sites along the upper Khabur River and its tributaries indicate that the Halaf-Ubaid transition was more than just a change in the dominant style of painted pottery that was being made and used in the region. The transition also is marked by changes in other pottery forms and by an apparent shift in settlement pattern as well. The Halaf-Ubaid transition, as it is manifested at sites in the Wadi Dara area of the Khabur headwaters region, is examined and an attempt is made to define what the term “transition” actually means in this localized context.

Davis, Hester A. (Arkansas Archeological Survey)

[58] WOMEN IN TEOCENTLI: INROADS IN THE OLD BOYS NETWORK

Teocentli is an informal communication mechanism amongst about 100 anthropologists, which is in its 62nd year. It was founded by Carl Guthrie in 1926 as a way for friends of sixteenth research on “the corn cultures of the New World” to communicate. It combined, and still combines, information on research cultures with personal notes. No women were included in the first two issues. By 1941, there were only four, in 1988, there were ten women out of the 64 respondents, plus four more whose communication was written jointly with their husbands who are also anthropologists. Perhaps Teocentli is a microcosm of the history of anthropology, of the life of anthropologists, and of the increasingly important role played by women in this profession. It certainly contains their own thoughts on their own contributions.

Day, Jane Stevenson (Denver Museum of Natural History)

[75] SHARED SYMBOLS: GREATER NICOYA AND CENTRAL MEXICO

Lower Central America has long been a meeting place of cultural traditions from various areas of the New World. Situated at the crossroads of northern South America and Mesocoeafrica, people, ideas and influences came and went leaving their imprint on indigenous cultures. Beginning at about A.D. 800, imagery reflecting the central motifs of Central Mexico can be recognized as decorative elements on ritual items from burials in the Great Nicoya area of Costa Rica/Nicaragua. This paper examines the evidence and proposes an explanation for observed similarities in iconography in these two distinct geographic regions.

De Atley, S. P. (see Bishop, R. L.) [12]

De Mott, Carol A., Rodney C., De Mott and Neal H. Lopinot (Southern Illinois-Earlsville)

[76] ARCHAEOBOTANICAL ANALYSIS OF A BURNT MISSISSIPPIAN STRUCTURE AT CAHOKIA

Archaeological investigations at the Cahokia site in 1985 resulted in the identification of a burned Late Stirling phase wall trench structure with an in situ material inventory. The systematically collected archaeological remains from within the structure and their spatial relationships with interstructural features and artifacts are discussed. Only two completely burned structures have been identified at Cahokia to date, and the comparatively large amounts of recovered archaeobotanical remains provide important data on household economic and social activities.

De Mott, R. C. (see De Mott, C. A.) [76]

de Quiros, F. B. (see Cabrera Valdes, V.) [2]

Deegan, Kathleen A. (Florida Museum of Natural History)

[22] ACCOMODATION AND CONFLICT: PROCESS AND IMPACT OF SPANISH COLONIZATION IN SIXTEENTH CENTURY FLORIDA

The first successful permanent European colonization effort in America north of Mexico took place at St. Augustine, Florida. St. Augustine was founded in 1565 and remained a small, fragile and isolated frontier outpost until Florida was ceded to England in the eighteenth century. Nevertheless, the settlement had an important impact on the native societies of sixteenth century Florida, but also on the ways in which Europeans in North America learned to adapt to new world conditions and crystallize a general European-American cultural tradition. A summary is given of the archaeological evidence bearing upon Spanish adaptive strategies, Amerindian-European interaction, and how these processes articulated to foster a hybrid Hispanic-American tradition.

Deal, Michael (Memorial-Newfoundland) [Discussant 31]

Dewez, Michel

Dearborn, David S. P. (Lawrence Livermore National Laboratory)

[79] OBSERVATORIES AND CEREMONY IN YAMANTINSUYU

The Inca made accurate observations of the sun for ceremonial as well as astronomical purposes. This paper presents evidence to support the proposal that the towers of the Inca observatory at Cuzco were of a type commonly found in the Incas and that the astronomical observatory at Cuzco was a highly complex building, one that the Inca had constructed to best serve as an astronomical observatory.

Debenath, Andre (Institut du Quaternaire)


This paper attempts to delineate the different Mousterian groups which are now known in the Charente Basin and to show their relationship with the Mousterian lithic assemblages of Southwest France, e.g., Chalose, Perigord, etc. Some types of behavior of the neanderthals are studied through the lithic assemblages and some of the structures are found in rockshelters and caves. The author also gives his feelings for the spiritual life of the neanderthals in this area.

DeBloois, Evan I. (USDA Forest Service-Washington)

[63] CULTURAL RESOURCE MANAGEMENT IN THE USDA FOREST SERVICE: THE SECOND TWENTY YEARS

The USDA Forest Service began its program of cultural resource management with the hiring of its first archaeologist in the summer of 1970. Since that beginning, the Forest Service has expanded its CRM program to nearly 200 archaeologists, anthropologists, and historians working on 150 National Forests and 40 National Grasslands from Florida to Alaska and from California to Maine. Budgets have expanded from a few thousand dollars in 1970 to over $15.5 million for fiscal 1980. In the last several years noticeable new forces and concerns began to shape and redirect the forces of the Forest Service's CRM program. A gradual shifting in focus to compliance with preservation regulations to one of protection and preservation of cultural resources for the public benefit is seen. The future direction of the program is beginning to appear. This paper will deal primarily with current forces and future directions of the Forest Service's CRM program.

DeBoor, Warren (Queens-CUNY) [Discussant 31]

DeFrance, Anne Swearengen and Jane Stone (Montana State)

[48] MUSEUM DATABASE: A RELATIONAL DATABASE PROTOTYPE FOR COLLECTIONS MANAGEMENT AND RESEARCH

Museum Database was designed for a medium sized archaeological museum. The goals accomplished were: 1) to provide for both administrative and research needs, including management of visual data (e.g., photographs, drawings); 2) create an exceptionally user-friendly interface; 3) utilize a relational database design, and 4) to keep costs to a minimum. The relational design allows all data items to be retrieved, in any combination, and for data to be added, updated, or deleted without creating anomalies. The database design can be customized for any museum or project, and for use with any relational database software package.

Demarest, Arthur and Stephen Houston (Vanderbilt)


Recent archaeological and epigraphic research has revealed the great complexity of the Maya political landscape over time and space. During the period from 300 B.C. to A.D. 1000, each site had a different developmental trajectory and a distinct period of florescence. Over space, any given period had polities ranging from petty chiefdoms to large, if only brieufly successful, conquest states. Evidence for such Maya political dynamics is presented and ethnographic models are evaluated against new historical and archaeological data from the Petexbatun region and other areas of the southern Maya lowlands.

Demarest, A. (see Pry, M. E.) [35]

Demarest, A. (see Arroyo, B.) [35]

DePratter, C. (see Hudson, C.J.) [1]

DesSjean, T. (see Wilson, R. C.) [33]

Dewez, Michel (Catholique de Louvain)

[51] PRODUCTION, STRATEGIES OF BONE AND ANTLER TECHNOLOGY IN BELGIUM

Aurignacian and Magdalenian antler working is compared. These technological strategies are discussed in relation to the nature of the raw material and to the production of desired tool forms. Based on material recovered during excavations at Grotte Walou, Belgium, it is clear that both reindeer antler-
and red deer antler were available during the Aurignacian. Red deer antler was preferred for tool manufacture even though it is denser, more compact, and more difficult to work than reindeer antler.

Given the same choice, reindeer antler was the material of choice during the Magdalenian. Refitting of percussion shatter indicates that percussion techniques were used to work red deer antler during the Aurignacian. During the Magdalenian, the grove and splinter technique was used.

Dibble, H. L. (see Rolland, N.) [24]

Dietler, Michael (UC-Berkeley)


The adoption of elements of Greek and Etruscan culture by Early Iron Age indigenous peoples of southern France, a process commonly (and incorrectly) described as “Hellenization,” was neither passive nor random, but a creative transformation of two specific aspects: objects related to drinking wine and the techniques used in pottery manufacture. The explanation of this selective demand for exotic cultural elements, and of the social effects stemming from their adoption, lies in the native political economy. The social meaning and distribution of the two ceramic wares (“Pseudo-Ionian” and “ceramic grise”) which were developed after contact (by combining imported techniques and a mixture of exotic and native elements) as assessed through examination of their relation to demand for imported wine and of their place in indigenous patterns of consumption in general.

Dillehay, Tom D. (Kentucky)


In the study of complex societies, archaeologists often rely on the content and distribution of materials in ceremonial sites to reflect on the social and economic organization of a society. To date, little ethnoarchaeological information exists on the content, use, and discard of utilitarian and non-utilitarian goods before and after public ceremony, and on informant accounts and site layout and composition. The results of twelve years of intermittent research and monitoring of several large, architectural and non-architectural ceremonial fields in the Mapuche society are analyzed. These results are discussed in terms of their archaeological implications.

Dincouze, Dena (Massachusetts) [Discussant 58]

Dixon, Eusebio Z. (Pennsylvania)

[9] IS THERE AN IRON AGE IN THE PHILIPPINES?

It has been argued that a “Philippine Iron Age” began around 500-200 B.C. The results of my archaeological study on whether the term “Iron Age” is valid in the Philippine context are summarized. The appearance of iron in certain areas of the Old World is surveyed. Iron artifacts from the Philippines were tested metallurgically. Philippine ethnographic and ethnohistorical records were examined for the supply of iron by Chinese traders and local blacksmithing. I conclude that there were iron-using societies in some areas of the Philippines beginning about 370 B.C., but no real iron Age is evident.

Dubow, Susan (Arizona)

[74] PERSPECTIVES FROM THE RECENT PAST: INDIGENOUS SOCIAL STRATIFICATION SYSTEMS IN CULTURE CONTACT AND CHANGE

Nowhere is the interface between social complexity and exchange more than in early intercultural interactions between Islanders and Euroamericans. While many recent Oceanic case studies have described dynamic and purposeful interactions, there have been few comparative analyses of the commonalities and differences in Islander-Euroamerican contact, exchange, and interaction.

Drawing from both archaeological and ethnographic data, the importance of indigenous stratification systems is examined in the structuring of, and the response to, contact period exchanges between Islanders and Euroamericans.

Doershuk, John and John P. Hart (Northwestern)


The use of sedentarism in cultural evolutionary studies of prehistoric hunter-gatherers has become increasingly common during the past decade. Concern with the origin of sedentarism has often become a goal in itself serving to shift research away from the explanation of spatial and temporal variation in landscape utilization. We review the development of the sedentarism concept and propose an alternative approach that stresses the dynamics of regional positioning strategies. Changes in these strategies are viewed as responses to exogenous and endogenous pressures operating on hunter-gatherer societies.

Donahue, D. J. (see Long, A.) [59]

Donahue, Jack (Pittsburgh) and David R. Watters (Carnegie Museum of Natural History)

[50] BARBUDA, LESSER ANTILLES: SHORELINE CHANGE BEFORE AND DURING PREHISTORIC AND HISTORIC OCCUPATION

The island of Barbuda, Lesser Antilles, demonstrates progradation or expansion through time. The eastern third-fourths of the island originated in Miocene and expanded from the east to the full size of the Pleistocene. Integration of geologic and prehistoric occupation data strongly suggest that the lower one-fourth of the island, the Lagoon and Palmetto Point, originated after occupation. A sequence of historic maps demonstrates unequivocally that Palmetto Point is continuing to expand in a southerly direction.

Donahue, Randolph E. (SUNY-Stony Brook)

[66] SETTLEMENT, SEASONALITY, AND SITE FUNCTION IN THE ITALIAN FINAL EPIGRAVETTIAN

As in other regions and in other periods of the Paleolithic, controversy emerges over attempts to explain the variability among Italian Final Epigravettian (14,000-8,000 B.P.) assemblages. Analysis of lithic artifacts from Palazzolo cave indicates that a strong association exists between certain artifact types and specific tool functions and activities. Given this, and our understanding of activities, seasonality, and site function, a comparative study of Final Epigravettian site assemblages provides strong support for Barker's model of hunter-gatherer seasonal transhumance with upland summer sites and lowland winter sites. It also demonstrates strongly that there exists within each of these topographic zones a simple dichotomy of base camps and hunting camps.

Donahue, R. E. (see Colten, R.) [34]

Douglas, John E. (Arizona)

[61] A REEVALUATION OF NONLOCAL CERAMICS AT PAIQUE (CASAS GRANDES) IN CHIHUAHUA, MEXICO, AND THE IMPLICATIONS FOR REGIONAL INTERACTION

The relatively high percentage of nonlocal ceramics at Paigue (Casas Grandes) has been considered an indication that the prehistoric settlement was served an assemblage of Greater Southwest, particularly within the Northern Sierra region. After examining the assumptions underlying this formulation, the distribution of nonlocal ceramics at Paigue is analyzed through time and space (i.e., differences between room groups). Not until the last prehistoric phase in the sequence is there evidence of a sizeable increase in nonlocal ceramics and a nonrandom distribution of these ceramics between room groups. Alternative hypotheses for explaining the observed pattern are presented.

Douglas, John G. (BLM-Washington, D.C.)

[63] WHY NOT MANAGE CULTURAL RESOURCES?

We've talked about cultural resource management for 15 years now, but we haven't seen much management going on. Surely management has to be something more than routine determinations of National Register eligibility, routine section 106 compliance, and routine mitigation of effects. Maybe if we broaden our model of management, come back our fears of the unknown, and apply what we do know, we can guide managers to insightful, long-range resource management decisions that develop and exploit cultural resources' special capacities as time resources. A model is offered that explores options and invites participation in making management happen.

Downum, C. E. (see Sullivan, A.) [12]

Doyel, David E. (Pueblo Grande Museum)

[61] PREHISTORIC INTER-REGIONAL CERAMIC EXCHANGE IN SOUTHERN ARIZONA

Between A.D. 750-1050, interregional ceramic exchange among the prehistoric Hopokam of southern Arizona cross-cut major drainage systems. Between 1050 and 1250, non-local ceramic exchange between the Salt and the Gila River valleys appears to diverge, while coexistence of local and non-local ceramic assemblages is apparent for the 1250 to 1450 period. The results of analysis of non-Hopokam ceramics recovered at Hualapai, Yuma, Los Cabalosa and other Hopokam sites are used to evaluate the recent hypothesis that the major rivers in southern Arizona served as barriers to interregional non-Hopokam ceramic exchange.
Driver, Jonathan C.

[15] SCALES OF ANALYSIS IN ZOOARCHAEOLOGY
Most zooarchaeological analysis is conducted at the site level and most interpretation is undertaken in a cultural-ecological framework. In this paper it is argued that one of the problems which has inhibited the growth of zooarchaeology is the mis-match of scale of analysis and interpretive framework. Using examples from Britain and North America it is demonstrated that while inter-site variation is best understood in terms of cultural ecological models, intrasite variation must be examined in terms of refuse disposal patterns, and intercontext or intrasite variation requires an understanding of the changing functions of features over short time spans.

Dunbar, James (Crawfordville, FL)
[50] THE NATURAL RESOURCE ORIENTATION OF CLOVIS AND SUWANNEE AGE PALEOINDIAN SITES IN FLORIDA WITH PARTICULAR REFERENCE TO THE OUTTER CONTINENTAL SHELF
Ninety percent of the known Paleoindian sites in Florida containing Clovis, Suwannee or Simpson points and associated artifacts are located near karst depressions that penetrate the limestone aquifer. This distribution of Clovis/Suwannee sites indicates settlement patterns were centered where natural resources were most abundant, particularly potable water and lithic supplies. Given the difficulties associated with locating offshore sites, the model based on the type and distribution of sites on the adjacent coast will be reviewed and potential for locating Paleoindian site clusters in the Eastern Gulf of Mexico will be discussed.

Dunham, P. S. (see Leventhal, R. M.)[11]

Dunnell, Robert C. (Washington)

Dunne, R. C. (see Madsen, M.)[52]

Dunnell, R. C. (see Simek, J. F.)[17]

Dunning, Nicholas (Minnesota)
Analysis of new survey data from the northern Puuc suggest a seven-tiered settlement hierarchy, with major sites spaced at eight to twelve kilometer intervals, smaller sites cluster near surrounding zones of productive soils and near the conical boundaries of major site polities. The regional settlement hierarchy changed through time, culminating in the development of Uxmal as a regional capital. Elite group control in the Puuc appears to have been based on a perceived ability to ritualize a chronic environmental threat and agricultural productivity. Precariously high Terminal Classic populations made the region vulnerable to agricultural failure and threatened the stability of the socio-political system.

Duszynski, D. J. (see Essenpreis, P.)[78]

Dye, David (Memphis State)
Native American contact with Europeans began in the interior Southeast, particularly the Mississippi Valley, when members of the De Soto expedition pushed inland from their winter encampment near Tallahassee in March of 1540. The entrada fought their way through the interior until July of 1543. I discuss the native reaction to Spanish presence in terms of Mississippian patterns of defensive and offensive tactics. Ethnohistorical accounts of chieftain warfare may provide insights concerning the nature of chiefly political strategies and posturing in relation to external threats and consequent decisions ruling elites may make either in terms of political alignment or the deployment of armed forces.

Earle, Timothy K. (UCLA) [Discussant 4]

Earle, Timothy K. (UCLA) [Discussant 74]

Early, Ann (Arkansas Archeological Survey) [Discussant 27]

Eddy, F. W. (see Malville, J. M.)[78]

Elmerendorf, Julia (Tennessee Valley Authority)
[33] A ROLE FOR THE AMATEUR ARCHAEOLOGIST: ALLIES IN DECREASING SITE LOOTING
Amateurs in the southeast have long played an important role in archaeological research. Although the current relationship between amateurs and professional archaeologists is not very good in many
Elston, Robert G.

cases, amateurs should be seen as allies in our efforts to control site looting. Various groups have had success in using amateurs to prevent site destruction. A clear role for amateurs should be developed by the profession that assures them the recognition and respect they want. Various means of positive reinforcement of amateur efforts are discussed.

Elston, Robert G. (Intermountain Research)

PROCUREMENT AND TRANSPORTATION

The weight and density of toolstone limits the amount of lithic material that an individual can transport. Recent research at Tseawuhi (White Knife) Quarries (26EK3052) in north central Nevada suggests that one solution to this problem is a mixed strategy involving both “direct” and “embedded” lithic procurement. Episodes of intensive quarrying are relatively infrequent, although perhaps of several days duration. During these episodes, large amounts of processed toolstone are produced in the form of flake blanks and bifaces. What cannot be immediately transported is cached at the quarry to be retrieved as needed, without the necessity of further excavation.

Emerson, Alice (Washington State)

VARIABILITY IN BISON CARCASS COMPOSITION AND THE CONSTRUCTION OF CARCASS UTILITY MODELS FOR USE IN ARCHAEOLOGICAL APPLICATIONS

Variability in bison muscle, marrow, bone grease, and body fat production and distribution is examined and an evaluation is made of how these differences influenced prehistoric hunters’ prey selection, butchering and processing decisions. An attempt also is made to evaluate how current models of carcass utility can be adjusted to accommodate the variability observed in carcass composition to provide greater flexibility and explanatory power in their archaeological applications. Data for these evaluations come from analyses of four bison carcasses provided for study by Theodore Roosevelt National Park in a National Science Foundation sponsored study.

Enloe, James G. (New Mexico)

FAUNAL EVIDENCE FOR SUBSISTENCE CHANGE IN THE UPPER PALEOLITHIC

Data from Couche V, an Upper Paleolithic level, at Le Plageole (ca. 25,700 B.P.) and from Niveau IV-V, a Magdalenian level, at Pincevent (ca. 12,000 B.P.) suggest a contrast in butchering and consumption patterns of faunal resources. Although each faunal assemblage consists of more than 95 percent reindeer, evidence from body part representation, cut marks, and bone breakage suggest immediate consumption of kills in the earlier case and preparation for storage in the later case. This contrast would be consistent with a shift from a foraging type of organization to one of logistical collecting. Site structural data are used to evaluate this proposition.

Ericksen, Clark L. (Pennsylvania)

METHODOLOGICAL CONSIDERATIONS IN THE STUDY OF ANCIENT ANDEAN FIELD SYSTEMS

Prehistoric raised field agriculture provided the economic base for complex society in the Lake Titicaca Basin of Peru and Bolivia. The study of this agricultural technique provides detailed information about technological sophistication, social organization, and cultural values of raised field farmers. A combination of trenching, topographic mapping, soil and flotation analysis, aerial photographic interpretation and experimental archaeology provide an effective methodology for approaching these issues. These methodologies can be applied to the study of other ancient garden and field systems throughout the world.

Eriksen, Berit Valenina (Aarhus)

MODELING INTERSETTLEMENT PATTERNS IN THE LATE PALEOLITHIC AND EARLY MESOLITHIC OF SOUTHWEST GERMANY

Settlement analyses form the basis for an examination of how resource exploitation and internal socio-dynamics influenced one another during the Late Glacial and Early Postglacial of the Swabian Alb. Multiple Correspondence Analyses are employed to investigate different forms of resource exploitation regarding the covariation of environmental conditions, subsistence economy and demography. Cartographical analyses form the basis for a discussion on territoriality, mobility and communication. Based on these analyses, an explanatory model integrating different sites in a regional, integrated system of behavior is proposed. Suggestions for future lines of research for testing the model are given.

Erlandson, Jon M. (UC-Santa Barbara)

ON RECONSTRUCTING DIETS FROM CALIFORNIA SHELL MIDDENS

For decades, prehistorians have tried to reconstruct the diet of coastal hunter-gatherers by analyzing faunal remains from shell middens. The problems involved in the sampling of California middens are reviewed and methods used by California archaeologists to reconstruct prehistoric diets are critically examined. Particular emphasis is placed on problems that have plagued midden analyses for decades, including: 1) the differential effects of screen size on the recovery of various classes of faunal remains; 2) distinguishing faunal remains of natural versus cultural origin; 3) conversion from archaeological to nutritional units of analysis; and 4) assessing the nutritional role of animal foods given the selective disintegration of most plant food remains.

Essexreiz, Patricia (Florida) and David J. Dusinskas (Cincinnati Museum of Natural History)

ASTRONOMICAL ALIGNMENTS AT THE HOPEWELLIAN FORT ANCIENT SITE

Recent research at the Hopewell site of Fort Ancient suggests that a portion of the earthwork may have been laid out as a solar and lunar observatory. In general the site is very irregular in form, with the walls tending to follow the bluff edge. However, the northeastern portion of the work is laid out with geometric precision and contains four mounds that form a perfect square 155 meters on a side. Recent survey indicates that an observer standing on the western mound of this square could sight through particular gateways and align with the northernmost moonrise, the summer solstice sunrise, and the minimum northern moonrise.

Etcheson, Meeks (USFS-Ouachita)

PREHISTORIC USE OF GEOLOGICAL RESOURCES IN THE OUACHITA MOUNTAINS

The Ouachita Mountains cover a large area in west-central Arkansas and southeastern Oklahoma. The geologic resources found within the mountains are varied and widespread. These resources include, but are not limited to, novaculite and quartz crystals. These materials, among others, were widely used and traded in prehistoric times.

Evans, Susan (Pennsylvania State) and Ann Corinne Freter (Ohio)

HYDRATION ANALYSIS OF OBSIDIAN FROM CHUATCEPAN, AN AZTEC PERIOD VILLAGE IN MEXICO

The results of a chronometric analysis of obsidian excavated from Chuatcepan, an Aztec period village in the Tixtlaucan Valley, Mexico is presented. In spite of the wealth of archaeological and ethnohistoric materials pertaining to the Aztec period, many questions remain about the timing of demographic trends and broad historical events. Obsidian hydration analysis has yielded a set of dates ranging from A.D. 1040 to 1611, substantiating the general range of village chronology as determined by ceramics and documents, and indicating that villages like Chuatcepan were probably established by Toltec migrants and enjoyed rapid growth in subsequent generations.

Evett, Daniel (Ithaca, NY)

MODELING MESOLITHIC PLANT FOOD CONSUMPTION: THE CASE FROM ITALY

The current view of the European Mesolithic holds that this cultural episode largely preceded the succeeding Neolithic. It is generally agreed that deviations from the antecedent Upper Paleolithic subsistence patterns were central to this transformation, the relative importance of plants and animal foods is less settled. A "Mesolithic Plant Food Consumption Model," originally stimulated by archaeological and paleoenvironmental data from Italy, suggests that the underlying factor in both the nature and pace of early Holocene cultural changes, whether "Mesolithic." or "Neolithic," was a substantial increase in plant food consumption.

Ewen, Charles (Florida Bureau of Archaeological Research)

THE RISE AND FALL OF PUERTO REAL

Puerto Real, founded in 1504, was one of the earliest settlements on Hispaniola. Intended to be a major city, it suffered its first economic setback when nearby mineral deposits proved disappointing. Although buoyed by a brisk trade in slaves and hides, the economy of Puerto Real was dealt a crippling blow when its port was not included on the route of the Spanish fleets. A heavy reliance on locally manufactured items and smuggling bear mute testimony to life in an economic backwater.

Ewen, Charles (Florida Bureau of Archaeological Research)

SOLDIER OF FORTUNE: HERNANDO DE SOTO IN THE TERRITORY OF THE APALACHEE, 1539-1540

Hernando de Soto was a seasoned campaigner who had been involved in the successful conquest of the Inca empire. His ambition led him to attempt the conquest and colonization of La Florida. The route of his ill-fated expedition has proven elusive to researchers. The discovery of de Soto's 1539-40 winter camp site in Tallahassee provides a solid spatial marker on the route. The artifacts recovered from the site indicate the reliance of the Spanish on locally produced goods, the type of trade goods brought by the Spaniards, and refines the ceramic chronology for the Apalachee territory.
[23] ARCHAEOLOGY, LOOTING, AND THE PUBLIC
Public perceptions of archaeology often revolve around romantic images of the past, of buried treasure and mysterious civilizations. There is also a widespread view that archaeology is a luxury. By the same token, archaeologists regard the public, in many instances, as an irrelevance. This presentation discusses some of the strategies for improving communication between professional archaeologists and the public. It also enumerates the basic responsibilities of archaeologists toward the wider audience.

[46] EARLY VILLAGE LIFE IN THE JORDAN VALLEY: A STUDY OF RURAL SOCIAL AND ECONOMIC COMPLEXITY
Rural growth, rather than urban preeminence, marked the development of complex society in the Southern Levant during the second millennium B.C. Excavations at the farming hamlet of Tell el-Hayyat in the Jordan Valley reveal an unexpected diversity of social and economic activities that characterized Bronze Age villages, and linked them to larger towns. Spatial analysis of faunal and floral deposition distinguishes household subsistence behavior from communal religious activities at village temples. Inference of animal slaughter schedules and butchering practices, and neutron activation analysis of pottery production, suggest a variety of roles played by even the smallest communities in regional economic systems.

Ethnoarchaeological research among Efe Pygmies, present-day foragers in the Ituri Forest of Zaire, offers a case study to examine links between subsistence organization, aspects of social life, settlement patterns, and the organization of their technological repertoire. Efe have strong economic and sociocultural ties with neighboring horticulturalists. These ties influence the Efe settlement pattern of constrained mobility. Ties with horticulturalists and constrained mobility affect, in turn, Efe technological organization, which contains a strong component of storage and abandonment of possessions at former habitation sites. The archaeological record resulting from this system will have distinctive characteristics.

[50] BEACH RIDGE CHRONOLOGY ON THE LABRADOR COAST: ARCHAEOLOGICAL, GEOLOGICAL, AND PALEEOECOLOGICAL RESULTS
Two decades of archaeological reconnaissance and excavation have provided a large series of radiocarbon determinations for use in reconstructing cultural, botanical, and geological history from the Strait of Belle Isle in southern Labrador to Killinek at the entrance to Hudson Strait, a distance of 800 miles. In addition to permitting the establishment of a detailed sequence of Indian and Eskimo cultures, the close association of archaeological settlements with active shorelines in these maritime based cultures allows detailed reconstruction of post-glacial geological history for the eastern edge of the Laurentide ice sheet, which has been impossible to study any other way due to the paucity of datable shells, peat, or whale bone. The methods, problems, and results of this dating program are discussed.

Excavations at the prehistoric site of Ghazi Shah as well as geomorphic and archaeological reconnaissance in the Lower Indus Valley (Sind Province), Pakistan, have provided a wealth of new data concerning the origin and character of the Indus Civilization. This illustrated presentation focuses on recent discoveries for paleogeographic reconstruction of prehistoric irrigation systems, settlement
patterns, craft production and specialization. These contribute to an explanation of cultural developments in Pakistan during the fourth and third millennia B.C.

Fleming, Stuart J. [MASC-Pennsylvania] [Discussant 39]

Fleming, S. J. (see Swan, C. P.) [39]

Fletcher, Thomas (SUNY-Buffalo)

[34] SYSTEM SCALE, INFORMATION, AND ORGANIZATIONAL CHANGE IN TRIBAL SOCIAL SYSTEMS

Using data from Early and Middle Neolithic period sites in the Rhineland region of West Germany, this paper examines changes in the organizational structure of tribal social systems. Regional changes are identified through analysis of settlement and ceramic stylistic patterns relating to processes of tribal development. These patterns are compared with contemporaneous changes in community organization (status differentiation, leadership development, and social group integration) determined through analysis of settlement structure, architectural and mortuary variability. Using ceramic stylistic variability as a measure of information flow within a system, the role of information processing related stresses in organizational change is investigated.

Foradas, James G. (Ohio State)

[21] SOURCING OF FLINT USING NORMATIVE MINERAL COMPOSITIONS AND THE SCANNING ELECTRON MICROPROBE: AN EXPERIMENTAL STUDY USING FLINT RIDGE FLINT

A new, universally applicable flint sourcing method based on normative mineral compositions was tested on samples from two different prehistoric quarries at Flint Ridge, Ohio. Interferential distinctions were based on detrital mineral compositions, and in situ modification of the flint was used to detect “marker mineral” abundances in replicates of “Hopewell” bladelets manufactured from flint samples collected from the two quarries. Tests of the effects of heat treatment on source identification were also conducted. The method was nondestructive making blade-lets available for subsequent archaeological analyses.

Ford, Anabel (Social Process Research Institute) and Scott L. Fedick (Arizona State)

[25] PROGRAMME FOR BELIZE: MANAGEMENT OF PREHISTORIC MAYA CULTURAL RESOURCES IN A TROPICAL FOREST PRESERVE

The Programme for Belize is a consortium of Belizean and international organizations dedicated to the preservation of natural and cultural resources within Belize. The Coca-Cola Corporation has donated 40,000 acres of tropical forest lands to the Programme, and an additional 110,000 acres are being purchased. The Programme recognizes archaeological resource management as an important aspect of conservation planning and, as a first step, has sponsored an archaeological reconnaissance that was carried out in August 1988. This project involved aerial and ground survey, and the mapping of a major center known as Las Milpas. The results of the reconnaissance, as well as background research, indicate an abundance of archaeological resources including prehistoric Maya centers, habitation sites, and agricultural features. These resources are described and plans for future management and research are presented.

Ford, S. (see Mees, G. C.) [16]

Fowler, Jr., Honorable Wyche (U.S. Senate)

[23] COMMENTS ON THE LOOTING OF ARCHAEOLOGICAL SITES

This presentation, by U.S. Senator Wyche Fowler from Georgia, will view the problem of the destruction of archaeological sites from the perspective of one of the country’s leading legislators interested in historic and prehistoric site preservation. The Fowler bill, introduced by the Senator last fall, is one of the most comprehensive preservation bills ever presented to the Congress, and offers significant support for archaeology.

Fowler, M. L. (see Dulan, R.) [60]

Fowler, William R. (Vanderbilt)


Extremely detailed documentary data allow unusually precise reconstruction of aspects of the political and domestic economy of several towns in the cacao-producing region of Izalco in the 1570’s and 1580’s. These data reflect a wide range of inequality in land ownership and differential productive capacity of households. Since it served as a medium of exchange, cacao was a principal tribute commodity, but it also provided access to the marketplace. Low-volume producers and middlemen traders were thus articulated with the regional economy. Prehispanic antecedents of this pattern are suggested.

Fowler, W. R. (see Amaroli, P. E.) [62]

Fox, W. A. (see Williamson, R. F.) [19]

Fradkin, Arlene (Florida)

[43] CHEROKEE ANIMAL CLASSIFICATIONS: CORRELATES TO THE CHEROKEE ZOOARCHAEOLOGICAL RECORD

Folk semantic analyses may be correlated with the study of faunal remains recovered from prehistoric and historical archaeological sites. The language and culture of the Cherokee Indians living in the Overhill towns in eastern Tennessee during the eighteenth and early nineteenth centuries serve as the subject for the present study. Cherokee animal classifications are examined as a means of gaining insight into the significance of particular animals within the Cherokee culture. Such findings, in turn, are compared to the Cherokee zooarchaeological record. The latter consists of faunal samples recovered from the Cherokee Chota and Citico sites.

Frankel, Mark S. (American Association for the Advancement of Science)

[38] THE PROFESSIONAL SOCIETY ROLE IN PROMOTING ETHICAL CONDUCT

Promoting ethical conduct is not solely the responsibility of individual professionals. Professional societies have a vital role to play as well. A case will be made for a professional society responsibility to promote ethical conduct among its members. Specific recommendations for discharging that responsibility will be offered, with some evaluation of their contributions to more effective ethical practices.

Freeman, L. G. (Chicago)


Excavations conducted at Cueva Morin (Cantabria, Spain) during 1968-69 produced some 307 "essential" (Bordes' term) retouched tools from an area seven square meters in extent. An immediately adjacent area of the same level measuring six square meters was opened during the excavation of an Aurignacian burial in 1970-71, yielded 227 more. Analyzed separately, these two partial assemblages would have been assigned two different "facies," and the difference between them is statistically significant. In the case of Morin 16, at least, spatial segregation of tasks seems a greater probable contributor to the apparent "facies" difference than other factors.

Freidel, David (Southern Methodist) and Linda Schele (Texas)


"Tlaloc-Venus War is a gloss for a Maya military code aimed at the conquest and subjugation of rival kingdoms. Great Jaguar Paw of Tikal introduced the complex of foreign symbols and concepts legitimating Tlaloc war in his successful conquest of Uaxactun on January 16, 378 A.D. Later Classic kings used Tlaloc-Venus war, generating significant -- if temporary -- territorial hegemonies. The Terminal Classic Chichen Itza lords succeeded in establishing an enduring, large-scale conquest state using Tlaloc war. We attribute the Chichen Itza success to the replacement of the principle of royal dynasty with that of rule by council -- multepeal.

Freter, Anna Corinne (Ohio)

[46] THE ROLE OF RURAL SETTLEMENT ANALYSIS AT THE MAYA CENTER OF COPAN, HONDURAS

The importance of rural settlement analysis in reconstructing the evolutionary processes among the Classic period Maya at Copan is considered. Based on data from six years of rural settlement survey and test pit excavations, and augmented by over 2,000 obsidian hydration dates, the settlement history of the Copan valley from 600-1200 A.D. is summarized. These regional settlement data are shown to significantly alter previous interpretations involving Mayan economic, social and political institutions as well as the growth and collapse of this complex society.

Freter, A. (see Evans, S.) [25]
Frison, George C. [Wyoming]

[47] PREHISTORIC HIGH PLAINS HUNTING STRATEGIES BASED ON MORTALITY STUDIES FROM FAUNAL REMAINS IN ARCHAEOLOGICAL SITES AND ANIMAL BEHAVIORAL STUDIES

Mammoth, bison, deer, pronghorn, mountain sheep and elk comprise most large mammal remains in High Plains archaeological sites. Except for mammoths, these species or closely related sub-species are extant in their natural habitats. Mammoth procurement models using identified procurement of the other species can be understood based on their observable behavioral characteristics. This is oversimplified because animal behavior changes with age, sex, season, weather, etc. However, with sex, age, and seasonality data from sites, these can be combined with known animal behavior to provide more reliable prehistoric animal procurement models.

Frison, G. C. (see Miller, M. E.) [40]

Fritz, John M. (Sackler Gallery for Asian Art)

[10] IMPERIAL STYLE AND SYMBOLIC POWER: A SOUTH INDIAN EXAMPLE

Certain of the arts produced in empires are related to systems of meaning that constitute royal authority. Specific built forms and pictorial themes together with their contexts are symbolic forms which define the center of social action and link it to transcendent principles of order. During the Vijayanagara Empire (ca. 14th-17th centuries, south India) styles were evolved in urban layout, in civic and religious architecture, and in the decorative arts which asserted the sacral and generative roles of rulers. Here, evolving style can be ritually interpreted through indigenous texts and foreign visitor's accounts. Examples are briefly discussed.

Gaffney, V. (see Mees, G. C.) [16]

Galloway, J. (see Reid, K. C.) [17]

Gannon, Michael V. (Florida)

[44] DEFENSE OF INDIAN RIGHTS IN THE FLORIDA FRANCISCAN MISSIONS

On two notable occasions in the sixteenth century Franciscan friars in the Florida mission system took successful action to defend the human, cultural, and religious rights of the native populations against the depredations of provincial governors. In the first instance they opposed Governor Diego de Rabellero (1665-1659) and his practice of enslaving Apalachee natives as burden bearers to carry corn and other products one hundred leagues to the provincial capital of St. Augustine. Their protests to the King resulted in Rabellero's removal from office and detention in Havana, where he died. In the second instance friars in the field defended native rights against similar outrages committed against them by Governor Juan Marquez Cabrera (1680-1687) as a result of their defense Marquez, too, was removed from office and held under arrest in Havana.

Garber, James F. (Southwest Texas State)


Chac Balam is located on the north end of Ambergris Cay and is ideally situated to have participated in the prehistoric long distance exchange routes. The site consists of a rectangular plaza group, approximately 135 meters east-west by 50 meters north-south. At the center of the site is a low plaza approximately 25 meters square. Adjacent to the site is a man-made canal which provides access from the coast to bay systems that lead to major population centers in the interior. Artifact analysis has provided valuable information on the shifts in trade affiliations as the site developed.

Garber, J. F. (see Guderjan, T. H.) [25]

Garcia-Arevalo, Manuel (Fundacion Garcia-Arevalo and Museo del Hombre Dominican)

[22] TAINO-ARAWAK CULTURAL RESPONSES TO SPANISH ARRIVAL IN HISPANIOLA

The Taino-Arawak Indians of the greater Antilles were among the most complex and densely settled of the American chiefdoms encountered by the Spanish. Nevertheless, they had virtually disappeared within thirty years of Spanish contact in Hispaniola, victims of introduced diseases, Spanish conflict, and slavery. Archaeological research in the Dominican Republic, however, has provided some insights into Amerindian acculturation and change in response to European presence before the demise. Some of these post-contact responses in Hispaniola are described using archaeological and ethnohistorical data.

Gersbach, E.

Garrison, Euan G. (Texas AeM)

[50] RECENT ARCHAEO-GEOPHYSICAL STUDIES OF PALEOORELINES OF THE EASTERN GULF OF MEXICO

Geological mapping conducted in 1987-88 in the Eastern Gulf of Mexico obtained detailed side-scan sonar and high resolution sub-bottom profiler data on paleoreliefes. Two relict shorelines have been tentatively identified at twenty and forty fathom depths below present sea level. In addition, buried stream channels have been identified entrenched within identifiable escarpments that still exist on the present seafloor in some areas. Preliminary results of analyses as to the age and origin of these paleoreliefes will be presented together with speculations as to their relationship to prehistoric settlement of the then sub-aerially exposed Outer Continental Shelf.

Gasco, Janine (Minnesota)

[4] DOCUMENTARY AND ARCHAEOLOGICAL EVIDENCE FOR HOUSEHOLD DIFFERENTIATION IN COLONIAL SOCONUSCO, NEW SPAIN

For colonial period Mesoamerica an understanding of household economic differentiation is best achieved through the combined use of documentary and archaeological evidence. Colonial documents containing household inventories provide information about material culture not readily available in the archaeological record alone. Not only are perishable materials (e.g., textiles, leather goods, and wooden objects) recorded in documents, but frequently the monetary values of household items also appear. This paper, which examines variability among households in colonial Soconusco, New Spain, illustrates how household inventories, together with archaeological data can be effectively used to study the colonial household economy.

Geddes, David (Kansas)

[43] MIDDLE NEOLITHIC CATTLE BUTCHERING AT VILLENEUVE-TOLOSA (FRANCE)

Detailed analysis of frequency, location, orientation, morphology, and anatomical significance of cut and defleshing marks on exceptionally well-preserved remains of domestic cattle, systematically butchered in one episode at the Neolithic site of Villeneuve-Tolosane (France), allows reconstruction of a carcass-processing sequence that included preliminary butchering (eversion, skinning, disarticulation), meat-processing for smoking or drying, and marrow consumption. Skeletal part frequencies are modeled using Binford's MGUI index. High frequencies of mid-shaft cut marks parallel those from East African pastoral Neolithic and early hominid sites. Implications are drawn for the study of early hominid meat and marrow acquisition.

Gelbard, Diane (Soil Conservation Service)

[63] TECHNOLOGY, PEOPLE AND THE FUTURE OF CRM IN THE SOIL CONSERVATION SERVICE

As we approach the twenty-first century, technological and demographic changes are occurring at an unprecedented rate. How can our cultural resource management (CRM) programs keep pace with the demographic trends and apply the new technologies? I address some of these changes and discuss ways to develop a strong CRM program for the twenty-first century using the Soil Conservation Service as an example.

Geneste, Jean-Michel (Direction des Antiquites Prehistoriques d'Aquitaine)

[24] THE DEVELOPMENT OF RAW MATERIAL PROCUREMENT ACTIVITIES IN SOUTHWESTERN FRANCE

New studies of Mousterian industries in southwestern France indicate the emergence of an organizational framework for the different forms of lithic tool-making as early as the Middle Pleistocene. These systemized behaviors seem to be in close relationship with the ways of life of the human groups and principally within the constraints of their subsistence economies. The concept of perception appears to be remarkably related to the energy management of physical resources coming about during regional group movements as well as to estimates of functional needs.

Gero, Joan (South Carolina)

[18] WOMEN AND STONE TOOLS

The assumption that it is males who produce stone tools is questioned. I begin by examining the gender-related meanings attached to the notion of “stone tool” and the contemporary intellectual context in which stone tool production is perceived as a male activity. An argument is presented for women as likely stone tool producers. Finally, archaeological data from highland Peru are interpreted as showing a shift towards greater participation by women in the process of stone-tool production after the Early Horizon.

Gersbach, E. (see Arnold, B.) [48]
who meet to discuss research goals, and the involvement of academic institutions in fostering high standards of performance and disseminating information through publication.

Gleason, Kathryn (Pennsylvania) [16] GARDEN EXCAVATIONS AT THE HEROICAN WINTER PALACE, JERICO Herod the Great's winter palace complex at Tulul Abu El-Aswug, near Jericho, includes a formally laid-out wing providing entertainment facilities baths, dining rooms, promenades, pools, and a variety of gardens. This paper presents the archaeological evidence for two small courtyard gardens and a monumental sunken garden. The range of evidence includes stratigraphy, archaeobotanical and faunal remains, archaeological analysis of flower pots found in situ, as well as literary and artistic descriptions of these and contemporary late Hellenistic gardens. The evidence gives a clear look at the construction of these gardens and a tantalizing glimpse of their former beauty.

Goldstein, Paul (Chicago) [6] TOWN PLAN AND DOMESTIC FUNCTION IN A TIWANAKU PROVINCIAL CENTER: THE CASE FROM QOM, SOUTHERN PERU Until recently, very little has been known about residential plan and domestic patterning in the Tiwanaku culture outside of its altiplano homeland. Extensive mapping and excavation of eight houses at the Qom site in 1986-1987 have shed new light on the spatial and social patterning of Tiwanaku's administrative center in Moquegua during Tiwanaku Phases IV and V and the local [Post-Expansive] Tumilaca Phase. The relevance of the town plan, domestic construction, and household features and contents to the economic and social development of Tiwanaku's mid-elevation provinces will be discussed.

Gomez-Pampa, Arturo (UC-Riverside) [26] THE MANAGEMENT OF MAYA FORESTS A review of the present knowledge on the vegetation of the lowland Maya area is presented with special emphasis on the forests. The traditional management of the forests in the Yucatec Maya area described in this paper is on the present day vegetation. Some ideas are given on the past management of forests based on the recently found cacao groves in the state of Yucatan and the role of forest gardens in Maya subsistence.

Gonlin, Nancy (Pennsylvania State) [46] RURAL OCCUPATION OF THE CLASSIC MAYA AT COPAN Rural excavations at Copan, Honduras have provided insight to the character of small peripheral domestic sites in the Maya area. The determination of the function of each site through architectural and archaeological data and the control of chronology through obsidian hydration dating both allow for a reconstruction of the relationship between the urban and rural zones during and after the Classic Period. Sites of similar size in each zone of Copan are analyzed to uncover differences and similarities between the core and the hinterland.

Governa, Rebecca (INAH) [35] ARCHEOLOGICAL INVESTIGATIONS AT LA VENTA: 1984-1988 Since 1984, INAH has conducted a program of research, protection, and restoration at La Venta, Tabasco. To date, the project has completed mapping of La Venta Island, and undertaken excavations in residential and ceremonial sectors of the site. Although Early Formative materials have been recovered from outlying portions of the island, the site core is almost exclusively Middle Formative occupation. During the 1988 season, the base of mound C-1 was excavated, locating previously known monuments, one new stela, and other fragments. Architectural features, such as alignments of limestone slabs at the base of the mound were also encountered.

Goodwin, C. M. (see Yentsch, A.) [16] TRENDS AND PATTERNS IN PALEOINDIAN RESEARCH IN THE SOUTHEASTERN UNITED STATES Because of the great density and variety of Paleolithic lanceolate points found there, the southeastern United States has figured prominently in archaeological thinking about Paleolithic in the east. However, little progress has been made in finding sites with stratified depth and integrity to enable dating of point types, assess site functions, and to evaluate subsistence. Recently, research in geology and paleoecology provides some explanation for this lack of deposition. Progress continues in mapping points, studying raw materials and probable geologic sources, and environmental associations, all of which provide grounds for speculating about Paleoindian settlement and demographic trends.
indicated by its unique later-Mesolithic (6,000-3,500 B.C.) lithic industry, and the effect of these geographic and historic factors on the subsequent adoption of farming during the fourth millennium.

**Greenfield, Haskell (Indiana)**

[9] THE SOCIO-ECONOMIC TRANSFORMATION OF SOUTHEASTERN EUROPE IN THE FOURTH MILLENNIUM

During the fourth millennium new, complex socio-political hierarchies emerged, agriculture is transformed by the introduction of the plow, wagon, and tract animals, and animal husbandry increases in importance with the introduction of secondary products and transhumance. By the end of the millennium, the socio-political and economic adaptations that so familiarly dot the ethnohistoric landscape of southeastern Europe are recognizable. Archaeological data from the Central Balkans are used to trace the emergence of a recognizably Southeast European culture during this crucial era.

**Gregg, Susan A. (Washington)**


Farmers expanded into the Alpine Foreland in the fifth millennium B.C. and settled primarily on loess soils. During the fourth millennium a so-called "secondary colonization" occurred in which farming villages were established on the heavier, less easily worked glacial soils. These villages have a strikingly different organization, a more diverse artifact assemblage, and what appears to be a more generalized subsistence economy. This paper examines the economic strategies of the "secondary" colonizers and reviews the state of current research.

**Greentshed, Kristen J. (North Carolina) and Cecil R. Isao (USFS-Daniel Boone)**

[27] TERMINAL ARCHAIC AND EARLY WOOLAND PLANT UTILIZATION ALONG THE CUMBERLAND PLATEAU

Evidence from Cold Oak Shelter and other sites in Eastern Kentucky indicates that the basic elements of a gardening complex utilizing cultivated sunspred, pepo squash and perhaps small grains were in place by the Terminal Archaic. Middle, only in the Early Woodland is there evidence of harvesting of large quantities of a morphologically altered domesticate (chin-tessa charnep). The well preserved plant remains from the dry rockshelters provide a more accurate record of nut utilization than open sites.

**Gresham, Thomas (Southern Archaeological Services, Inc.)**

[81] A SETTLEMENT STUDY IN THE UPPER JUBBA RIVER BASIN, SOMALIA

Continued survey and limited testing were conducted in late 1988 along the Juba River in southern Somalia. About 800 sites, ranging from Middle Stone Age lithic scatters to recent Islamic cemeteries, have been recorded in a proposed 200 kilometer long reservoir basin. A sample of the 500 open air sites was tested, twenty-five caves and rockshelters were documented (over half were tested), polychromatic rock art on ten rockshelters was traced and described, and a large number of rock carvings and cemeteries were recorded and a small sample tested. Middle Stone Age material dominates the site assemblages but Late Stone Age material is also prevalent. Variation in the assemblages is described and possible explanations are proposed.

**Griffin, John W. (Southeastern Frontiers, Inc.)**

[44] CHANGING PERSPECTIVES ON THE SPANISH MISSIONS OF LA FLORIDA

Current research on the Spanish missions of the Southeast reflects the maturing of two disciplines, historical archaeology and documentary history. A half century has seen archaeologists and historians move from indifference to each other, through a period of mutual disrespect, to a recognition of the interdependence of the data sources employed and toward the development of cooperative approaches. This bit of intellectual history is traced and examined.

**Griffin, P. Bion (Hawaii)**

[3] RETHINKING PHILIPPINE PREHISTORY

Philippine prehistory is largely a mythology constituted from folk beliefs, colonial degradation and ill-conceived archaeology. Only recently have foreign and Filipinos archaeologists begun to develop modern research designs and free themselves from the dominant mythology. American orientations continue, however, to guide the latest inquiries. Modern ecological and processual questions seem fruitfully raised, and old interests are best recast. The processes of the peopling of the archipelago, the florescence of Malayo-Polynesian speaking horticulturalists, and an ethnohistorically glimpsed social complexity need to be understood. Archaeologically testable models, based on ethnoarchaeological research, are considered.
**Grimm, Linda T.**

[SITE STRUCTURE AND FORMATION PROCESSES IN THE UPPER PALEOLITHIC AT SOLVIEUX: EVIDENCE FROM LITHIC REFINING]

A recent spatial analysis of horizontal patterning in a Perigordian level from the Upper Paleolithic open-air site of Solvieux (Dordogne), using K-means cluster analysis and lithic refining, indicates the presence of overlapping palimpsests of discrete knapping events with some subsequent mixing. The isolation of processes that were involved in the formation of this deposit is attempted by focusing on the problems of palimpsest definition and relationships. This will be approached through the analysis of production sequence data considered in concert with core reduction technology, raw material type, nature of tool production, feature associations and vertical artifact distributions.

**Grove, David C. (Illinois)**

[75] JADE USE, THE OLMEC QUESTION AND INTER-REGIONAL INTERACTION

The identification of various Formative period Central American jade/greenstone objects as "Olmecc" has strongly influenced interpretations of the prehistory of both Mesoamerica and the Intermediate Area. Reexamination and reanalysis of data on jade-greenstone use, distribution, and chronology, together with new understandings of the iconography, is presented. Current Olmec-centric interpretive models are suggested to be incorrect, and the data are reinterpreted in terms of social contexts, shared symbols of chiefly power, and inter-regional exchange patterns.

**Grove, David C. (Illinois)** [Discussant 35]

**Grzybowska, Susan D. (SUNY-Stony Brook)**

[68] A REEVALUATION OF PREHISTORIC LAND USE ALONG THE OUTER COASTAL PLAIN AS EXEMPLIFIED BY LONG ISLAND

Archaeological research incorporating ecological models for predicting site locations has considered the Outer Coastal Plain as having limited resource productivity. As a result of low expectations, site surveys have been extremely limited. Recent archaeological survey data collected along the Outer Coastal Plain of southern Long Island indicates that these ecological models have led to an underestimation of prehistoric exploitation. Spatial analysis of prehistoric sites, natural resources, and topographic configuration in this area demonstrates that along the Outer Coastal Plain prehistoric land use is independent of resource productivity. In addition, this research suggests a correlation between observed topographic projections and site location.

**Guderjan, Thomas H. (Texas Institute of Texas Cultures-San Antonio), James F. Garber (Southwest Texas State) and Lisa Brody (City University of New York)**

[23] AN INITIAL REPORT ON CHAN CHICH AND OTHER SITES IN NORTHEASTERN BELIZE

Chan Chich is a medium sized, Late Classic center consisting of at least 12 plazas near the Rio Bravo. In 1988 the site was located and measured from looters' trenches; the site was too small for the site's construction history. Additionally, initial maps of Las Milpas and other sites were compiled. This pilot project has led to a commitment to a long-term survey, mapping and excavation project in the area.

**Guenthner, T. (see Kornfeld, M.) [54]**

**Guilbaud, M. (see Backer, A.) [51]**

**Gunn, B. L. (see Brown, A.) [60]**

**Gunn, Joel (Texas-San Antonio)**

[65] GLOBAL CLIMATIC CHANGE AND ARCHAEOLOGY: YEARS OF FUTURE PAST

Analysis of extensive data collected since the ICY year 1958 indicates important relations between annual average temperature of the global atmosphere and regional hydrological balance. Models of global-regional climate derived from these data can be used to project climates into the past and future. Regional impacts of past climatic episodes warmer than the present, such as the Little Climatic Optimum (A.D. 900-1200), can be used to potential impacts of future greenhouse warming.

**Habicht-Mauhe, Judith A. and Winifred Creamer (School of American Research)**

[53] ANALYSIS OF ROOM USE AT ARROYO HONDO

Data on architectural features and artifact distribution from a single room block at Arroyo Hondo Pueblo (LA12) have been examined. Room block 16 at Arroyo Hondo spans both the early (ca. A.D. 1300-1350) and late (ca. A.D. 1560-1420) components. Variables such as room size, floor features, room connections, and rooftop work areas are analyzed in conjunction with artifact distributions to determine both individual room function as well as household structure within the roomblock as a whole.

**Hancock, Ronald G. V.**

[HABICT-MAUHE, J. A. (see Levenson, A. J.) [32]]

**Hahn, Joachim (Tubingen)**

[51] INTERASSEMBLAGE VARIABILITY OF THE AURIGNACIAN IN CENTRAL EUROPE

The Aurignacian in Central Europe differentiates into two distinct facies: open-air sites that are dominated by a single faunal species, reindeer (Lemmersum, Breitenbach), and have few bone tools, and cave sites that have varied faunal assemblages and are rich in bone and antler tools as well as beads and art objects. Different activities, seasonal occupations and general site functions produce assemblages which cannot be interpreted as being chronologically or culturally distinct.

**Hall, Barbara A. (Connecticut) and Barbara L. Stark (Arizona State)**

[4] CERAMICS AND SOCIAL DIFFERENTIATION AMONGST PREHISTORIC HOUSEHOLDS IN LA MIXTEQUILLA, VERACRUZ, MEXICO

A program of intensive survey, collection, and excavations in the Mixtequilla region of southern Veracruz has defined a dense residential occupation interspersed with numerous ceremonial centers, comprising a long occupation span. Excavations in one Terminal Classic period mound uncovered remains of a domestic structure collapsed on a deposit of serving vessels and elite and imported household wares. This material is compared with surface collections from residential mounds, in relation to such factors as occupation period, mound size and height, and distance to nearest center, in order to define the nature of social differentiation throughout the Mixtequilla region.

**Hall, Charles L. (Tennessee)**

[52] INVESTIGATING ARCHAIC SETTLEMENT IN MIDDLE TENNESSEE

Data derived from extensive non-site surface survey are used to explore Middle and Late Archaic settlement patterns in the Duck River in Middle Tennessee. The separate tasks of site definition, temporal determination, and assemblage composition comparison, are discussed as they relate to the primary goal of discovering factors affecting settlement location. A strictly quantitative approach is employed to assess both the gravitational effect of discrete features of the landscape, and the degree of fit between empirical spatial patterns and those predicted by optimization models.

**Hally, David J. (Georgia), Marvin T. Smith (Lamar Institute) and James B. Langford, Jr. (The Coosawater Foundation)**

[1] THE ARCHAEOLOGICAL REALITY OF DE SOTO'S COUSA

According to the de Soto narratives, the province of Coosa consisted of at least eleven named towns and groups of towns and required 24 days to traverse. According to archaeological evidence, the province consisted of eight spatially distinct clusters of sites. These clusters had a number of common features, including geographical size, number of component sites, and ecological setting. Most seem to be the end product of distinctive ceramic micro-traditions suggesting that they were loosely incorporated into the province. Province integration may be indicated by the geographical distribution of certain status items found in burials.

**Hamilton, Nathan D. (Southern Maine)**

[77] LATE WOODLAND OCCUPATIONS IN RIVERINE AND COASTAL SOUTHWESTERN MAINE

Late Woodland occupations in southwestern Maine are generally poorly known in riverine and coastal settings. Recent excavations at the Riverine Pejepscot and coastal Great Moshier Island sites provide a temporal framework for local cultural assemblages as well defined activity areas. The Late Woodland lithic and ceramic assemblages reveal considerable diversity in manufacture technology and style. A comparison of riverine and coastal assemblages are presented that further relates these manifestations to the broad Gulf of Maine.

**Hammond, Norman (Boston) [Discussant 11]**

**Hancock, Ronald G. V. (Toronto)**

[39] NEUTRON ACTIVATION ANALYSIS: IS IT ANY USE TO ARCHAEOLOGY?

The general principles of neutron activation analysis (NAA) are discussed briefly, with emphasis on the advantages and limitations of the technique. The usefulness of applying NAA to studies of a broad spectrum of archaeological materials, and hence, to try to answer a range of archaeological questions, will be addressed. Specific problems arising from the analysis of materials such as bone, copper, and pottery may provide food for thought.
Hann, John H. and Gary Shapiro

Hann, John H. (San Luis Archaeological and Historical Site) and Gary Shapiro (Bureau of Archaeological Research, Florida Dept. of State)


In the missionized provinces of Spanish Florida the council house was far and away the most impressive structure and perhaps the one that was most frequented by both the native and the outsider during the mission era. Consequently, it is the building for which we have the most detailed descriptions both of the structure itself and of the activities it housed. In 1985 and 1986 the first significant exploration of a mission-era council house was conducted at the San Luis de Talmalbi site. Images of the council house as reflected by the documents and by the excavations are presented and compared.

Hansell, Patricia (Temple)

[56] INTERPRETING DELATED FEATURES OF THE PAST: INTRASITE PATTERNING IN A MULTI-COMPONENT SITE FROM CENTRAL PANAMA

Excavation at the 218 hectare site of La Mula-Sarigua, Central Pacific Panama, has yielded evidence for considerable intrasite variation—variation which is the product of perhaps 10,000 years of occupation. Analysis of the density and distribution of the evidence indicates that, despite a largely eroded and deflated context, size, age, function and internal patterning can be discerned. The goals of this paper are threefold: 1) to outline the mapping techniques used in delineating the density and distribution of materials, 2) to describe the clusters recognized and 3) to interpret internal organization relative to the growth and collapse of settlement at La Mula-Sarigua.

Hanson, G. (see Rippetoe, B.J.) [63]

Hard, Robert J. and William Merrill (Smithsonian)

[8] MOBILITY AND SEDENTISM AMONG THE TARAHUMARA

The Tarahumara Indians in the Chihuahua, Mexico are currently是个移动 settlement system which makes use of winter, summer and field residential locations. While most households in the valley we examined change residences during the year some remain sedentary. We investigate the role that access to natural resources, agricultural fields and care of domestic animals play in conditioning this mobility. Implications for understanding mobility and the emergence of sedentism in prehistoric systems are discussed.

Harkins, O.F.M., Conrad (St. Bonaventure)


With the 1763 evacuation of a few remaining friars from St. Augustine ended one of the first systematic efforts to bring Christianity to the native population of the future United States. As part of that effort, five friars had given their lives in 1597 on St. Catherines and St. Simons Islands and the nearby Georgia mainland. One Franciscan here investigates questions related to the “martyrdom”: 1) were the natives sufficiently exposed to Christian teaching to contest doctrine; 2) was their action against the friars merely a civil revolt; and 3) did the missionaries provoke their fate by an imputable authority of authority?

Harmon, M. A. (see Radish, W.H.) [27]

Harmon, M. A. (see Snedeker, R.J.) [33]

Harpenden, H. C. (see Wood, J.) [57]

Harrold, Francis B. (Texas-Arlington)

[51] FUNCTIONAL LITHIC VARIABILITY IN THE UPPER PALEOLITHIC PERIGORD

In the Upper Paleolithic of Cantabrian Spain, Straus [1986] has reported a consistent dichotomy between lithic assemblages dominated by burnins and backed blades, and those dominated by scrapers and denticulates. This pattern crosses “cultural stages,” such as the Solriean and Magdalienian, and he suggests its relation to persistent patterns of functionally differented site use. I report on a review to determine whether the same (or analogous) patterning in assemblage variability exists in the Upper Paleolithic record of the Perigord region of southwestern France. Implications for understanding interregional lithic variability and traditional typological analysis are discussed.

Hart, J. P. (see Doershuk, J.) [71]

Hartzell, Leslie L. (UC-Davis)

[37] BUENA VISTA LAKE: FURTHER INVESTIGATIONS INTO “LACUSTRINE ADAPTATIONS”

Lacustrine environments have long been regarded as optimal (i.e., highly ranked) habitats for hunter-gatherers because of their stable, diverse, and abundant resources. More recently, however, it has been argued that lakes and lake margins do not provide that stable, rich resource base once assumed. In consideration of this debate archaeological investigations were recently conducted in the vicinity of Buena Vista Lake in the southern San Joaquin Valley of California. The lake microenvironment has played a significant role in the adaptive strategies of hunter-gatherer populations occupying the area over the past 8,000 years. Analysis of data generated from this study, when considered in light of a reanalysis of previous local research, suggests that the inherent qualities of the lake environment cannot wholly account for the patterns seen. It is argued that the use of lacustrine resources is tied to such features of human organization as technology, scheduling of resource use within an area, and ultimately population density.

Hassan, Fekri (Washington State)

[63] GEOARCHAEOLOGY OF NILE FLOODS AND GLOBAL CLIMATIC CHANGE

Geoastronomical investigations of the origins of civilization in Egypt have produced a detailed analysis of Holocene Nile floods. Comparison with paleoclimatic data from the Sahara and Europe reveal distinct flood patterns. The emerging model of climatic controls of Nile floods may thus serve as a guide to studies of contemporary and future climatic changes. Investigations have also focused on the impact of Nile floods on economy and settlement strategy in a framework of environmental psychology, subjective probability and decision making under uncertainty. Interpretation of human responses in the past provides a basis for evaluating current and possible future reactions to climatic crises.

Hastings, Charles M. (Central Michigan)

[42] INTENSIFIED ARCHAEOLOGICAL SURVEY IN THE CENTRAL PERUVIAN MONTANA

A preliminary assessment of 1988 fieldwork in Perú’s Chanchamayo Province is presented. This was the first season of a follow-up survey in an outer range of heavily forested mountains of the Eastern Andes. Coverage was concentrated between 1200-2200m in a small area recognized from previous studies as part of a boundary zone between highland Andean and Andean tropical lowland cultures during late prehispanic periods. Three ceramic complexes appear to be present: one Ancon, a second lowland, and a third of unclear origin. Continuing study of these complexes will better determine the extent of colonization from both directions within this frontier.

Hastorf, Christine A. (Minnesota)

[18] FOOD AND GENDER IN PREHISTORY

In most societies the family, centered around adult females and males, is the unit of production and distribution. Relations within the family, through divisions of labor and access, negotiation, production, and reproduction, create gender through actions but also through the use and placement of material in the residence. If gender is created in the daily living quarters and a main occupation of the household is to feed its members, then food should be a significant medium for determining and maintaining gender relations. Ways to study social relations in the past through the food system and depositional correlates will be discussed and illustrated with archaeological data from the Peruvian Andes.

Hatfield, James W. (Pennsylvania State)

[36] LAMAR PERIOD FARMSTEADS IN PIEDMONT GEORGIA

Recent research has demonstrated that a major population increase occurred in the upper Oconee River drainage [DeSoto’s “Ocute” Province] during the 16th century, a period of major cultural transformations among chieftains in the interior Southeast. Estimates of the number of Lamar Period sites in the region are in the tens of thousands, most of these being single family habitats in non-riverine settings. The ongoing research context and substantial results of the past two years of research on non-riverine (upland) sites are described, none of which had been thoroughly excavated prior to 1987. The critical role of these sites in our understanding of regional demographic and economic changes during the Contact Period is discussed.

Henn, Phoebe L. (CSES/CIES-Colorado)

[75] ADVANCES IN MINERALOGICAL STUDIES OF JADE

For a mineralogical evaluation of Mesoamerican and Central American jades a complex analytical scheme including X-ray diffraction and fluorescence (energy dispersive and wavelength dispersive,
reflectance spectrometry, transmitted light and scanning electron microscopy, and trace element isotopes was designed. To implement this study, a new X-ray instrument has been developed. This is a spectrometer with a custom sample chamber which allows non-destructive testing of entire artifacts and which simultaneously collects both mineralogical and elemental data from artifacts and natural samples. Although this very unique tool will initially provide valuable new data sets for the characterization and source evaluation of the enigmatic Central American jades, it can be utilized for any crystalline materials. Its potential applications to archaeological studies are far reaching.

Haynes, Gary [Simon Fraser] [Discussant 46]

Haynes, Gary (Nevada-Reno)

[47] MEGAMAMMAL AGE PROFILES: MEANING OR AMBIGUITY?

With wild animals, especially the megamammals, different mortality (age) profiles result from different causes of death, although trends in population growth or decline also affect the profiles. Age profiles from fossil collections may or may not clearly reflect human selectivity in preying on game populations. African elephant death samples (noncultural or cultural in origin) are characterized by three or four distinctively shaped mortality profiles. Profiles seen among large samples of free-roaming black rhino, Cape buffalo, American bison, and feral Camelus differ greatly when selective predation or environmentally caused mass kills account for deaths.

Haynes, John (WAPORA, Inc.)

[45] THE DULLES PROJECT: PROPOSED HIGHWAY CORRIDORS REVEAL LATE ARCHAIC SPATIAL ORGANIZATION

Cultural resources survey for a proposed highway in Northern Virginia has generated about 40 miles of Phase I surveys and Phase II testing of 17 archaeological sites during the assessment of three alternative alignments. Significant Late Archaic period sites have been found. Among these are a site including evidence of a large structure and a related special activity site. These sites, other sites covered by the highway project, and previous surveys of adjacent sites are evidence of the presence of the Late Archaic culture in the area. Investigations here have shown a surprising degree of sedentism for a minor tributary drainage. In contrast, the accepted view has been that semi-permanent settlements existed only on major river bottoms, where evidence for structures has been scarce.

Heckenberger, Michael J. (Pittsburgh), James B. Petersen (Maine-Farmington) and Louise A. Basa (New York Department of Environmental Conservation)

[19] EARLY WOODLAND PERIOD RITUAL USE OF PERSONAL ADORNMENT AT THE BOUCHER SITE

Recent analyses of artifacts and mortuary practices at the Boucher cemetery (VT-24-26) in northwestern Vermont have produced unique data about the ritual use of personal adornment in mortuary contexts during the Early Woodland period. Many interments included lavish amounts of copper beads and marine shell beads and ornaments. The copper artifacts created unusual conditions of preservation which enabled recovery of highly perishable artifact categories, including basketry or fabric cordage, and hide specimens. Emphasized are the artifacts categories related to personal ornamentation and the spatial relationships of these artifacts to individual interments. Taken in concert, these analyses are used to reconstruct site-specific mortuary practices and broaden regional patterns.

Heckenberger, M. J. (see Petersen, J. B.) [19]

Heilman, James M. and Arthur F. Goss (Dayton Museum of Natural History)

[78] SUNRISE AT SUNWATCH

SunWatch (33M157) is a 12th century Fort Ancient village in Dayton, Ohio. Eighteen years of excavation within the circular stockade has revealed a rigid pattern of concentric rings of houses, cache pits, and burial of artificial structures. Unlike many other sites, the documented planting, harvesting, and solstice alignments are supported by the cultural data. The excavation and analysis have allowed a more complete understanding of the alignments. The ongoing excavation, village reconstruction, and opening of the Museum allows the public to see how these farmers scheduled their activities by "Living the Sky."

Heinricke, E. (see Nicholas, L. M.) [46]

Henrickson, Robert C. (Royal Ontario Museum)

[51] NOT-SO-URBAN RENEWAL: NEIGHBORHOOD DEVELOPMENT AND SUCCESSION IN A BRONZE AGE IRANIAN TOWN

Analysis of architectural remains and associated artifacts from a large-scale exposure (700 square meters) of deep stratified Period III (2,600-1,400 B.C.) deposits at Godin Tepe in western Iran has defined long-term changes in the nature of, and activities within, a portion of the settlement. Differing ranges of activities coupled with repeated architectural changes, replacements, and localized abandonment contrast with the persistent overall neighborhood structure defined by road paths and building orientations. Other smaller clearances suggest the changing relationship of this area to the rest of the settlement. Regional survey data define the evolving roles of this central settlement within the Kangavar Valley.

Henry, Donald O. (Tulsa)

[2] TRANSMUTATION DURING THE LATE LEVANTINE MOUSTERIAN

Evidence from nearby, but elevationally distinct rockshelter sites is presented to support an argument for transmutation in the mountains of southern Jordan during the Late Levantine Mousterian (i.e., ca. 60,000 years ago). The elevations, settings, exposures, artifact densities, reduction strategies, and raw material procurement patterns of the sites are compared and contrasted. The high elevation (1,300 m) site of Tor Sabila is argued to have represented a transitory warm season camp, whereas the lower elevation (900 m) site of Tor Faraj is interpreted as a longer term cold season occupation. Furthermore, it is suggested that opportunistic "foraging" and logistically structured "collecting" procurement strategies were governed by the season of occupation.

Herron, Sherry (Maricopa County Superior Court, Arizona)

[23] PROTECTING THE RESOURCES: THE BROAD PROSPECTIVE

The experiences of the last few years of resource protection legislation should guide our future effort. Site protection must be made a priority within each responsible agency. More lawyers trained in the law are needed to complete the tasks with archaeologists and law enforcement agents who have obtained such training. The upholding of those laws which are rarely utilized, should be pursued. Still, the best protection may be prospective and volunteer monitoring programs as well as education of youth people which may provide the best vehicle for future resource protection.

Hesse, Brian (Alabama) and Paula Wapnish (Smithsonian)


The textual record of Canaan is rich with animal-related references, information that permits the exploration of extra-economic variables in zooarchaeology. Animals were part of a system of ethnical-political identification which originated through animal pre- and pro-scriptions known from biblical and extra-biblical literature. The effect of these ideological laws is explored with data from Philistine and Israelite Iron Age sanctuaries. Second, Canaan was the scene of an endless conflict between the Iron Age superpowers and local states. The tension in the opposition between these forces is reflected in the patterns of pastoral production which emerged as external pressures waxed and waned.

Hester, James J. (Colorado)

[63] THE ROLE OF ARCHAEOLOGICAL SITE PRESERVATION IN CRM

Three years of research conducted by the U.S. Army Engineer Waterways Experiment Station has identified a number of techniques suitable for protecting and preserving archaeological sites in situ. Full scale integration of these methods into Cultural Resource Management is yet to come, however, site preservation activities must be considered as management alternatives to mitigation or site avoidance. A prospectus for site preservation as a form of management will be developed.

Hester, Thomas R. (Texas) and Harry J. Shafer (Texas A&M)

[46] THE ANCIENT MAYA CRAFT COMMUNITY AT COLHA, BELIZE AND ITS EXTERNAL RELATIONSHIPS

The ancient Maya site of Colha, Belize, is noted for the many debris deposits and lithic workshops indicating a community-wide craft specialization in the production of chipped stone tools. Lithic technology studies of collections from major sites in the region suggest that Colha was the major production center and supplier of utilitarian [and ritual/ceremonial] stone tools from Late Preclassic through Classic times. However, its community status changed in the Classic period. This paper examines the role and status of Colha as a Maya community in the region of northern Belize in the Late Preclassic and Classic periods.
Hodder, Ian (Cambridge)

Hodge, Mary (Houston-Clear Lake)
[25] AZTEC PRODUCTION AND EXCHANGE OF CERAMICS: ARCHAEOLOGICAL EVIDENCE

A project analyzing Aztec period ceramic collections gathered by the Valley of Mexico Survey project has mapped the spatial distribution of decorated ceramic types at sites in the Valley, Oaxaca, Xochimilco, Ixtapalapa, and Texcoco regions. Concentrations of specific ceramic types and decorative design elements are used to estimate the extent of production and distribution systems in the area examined. Models of Aztec economic organization derived from documentary accounts are assessed in view of this study's findings.

Hofman, Christopher (UC-Berkeley)
[34] THE BEGINNINGS OF METALLURGY IN THE WESTERN MEDITERRANEAN

The distribution and development of chalcolithic metallurgical traditions, during the late third and early second millennium B.C., throughout the western Mediterranean is reviewed, with particular reference to the Balearic Islands. What are the social conditions that affect the introduction, adoption, assimilation or even invention of copper metallurgy? How do people respond to new technologies and materials? An analysis of technological aspects of the production sequence and their location in a social landscape provides some answers to these questions.

Hofman, Nancy Watford (George Washington)
[52] ISLAND ADAPTATION: THE IMPLICATIONS OF A SPANISH CERAMIC ASSEMBLAGE IN A LUCAYAN SITE

Island environments and adaptation may require a different approach to the interpretation of material culture, especially when the architectural sequence is not linear in time. An indigenous site on San Salvador Island, Bahamas is discussed where a large amount of exotic materials were excavated. In particular, the Spanish ceramic assemblage provides an opportunity to examine material culture in terms of its relationship to the processes involved in adapting to an island environment.

Hofman, Jack J. (Oklahoma Archeological Survey) and Lawrence G. Todd (Brown)
[40] REINVESTIGATION OF THE LIPSCOMB BISON KILL AND ITS SIGNIFICANCE FOR FOLSOM PERIOD RESEARCH

The Lipscomb Bison Quarry was first investigated in 1939 by the Nebraska State Museum. Following Schultz's 1943 publication on that first season's work, Lipscomb has figured prominently in discussions of the Paleoindian period. This report summarizes research at the site during the 1939, 1944, and 1988 seasons and the results of a continuing study of extant collections. Current published accounts, a MN of 55 bison are represented at the kill in 131 square meter area. The site of the kill, based on dention, was early fall. Comparison of the site with other Folsom locations demonstrates its extreme significance for Paleoindian research.

Holdaway, Simon (Pennsylvania)
[24] WERE THERE HAFTED PROJECTILES POINTS IN THE MOUSTERIAN?

A test is proposed to determine whether morphologically-defined points were used as hafted projectiles based on the pattern of use-related damage seen on projectile points from recent periods. The test is applied to Mousterian points, identified according to criteria for points with no sites (Warwasi and Bisitun). The results show that the Mousterian points have a higher concentration of breakage patterns in the breakage pattern consistent with a projectile point function. This test provides evidence for the recent debate regarding the importance of hunting in huminoid adaptations.

Holdcroft, T. R. (see Kent, I. D.)[55]

Holm, Frank (Yale)
[59] PATTERNS OF ADAPTATION IN THE JEBEL

The Jebel of North Syria has hosted a mosaic of cultural and political ties. The Millenium B.C. in large walled urban centers with far-reaching economic and political ties. The foundations on which these were built lie in sites of the earlier era. These sites provide key data in understanding developments in agriculture and herding and huminoid adaptations to regional cultural landscapes. Based on data from many larger spheres of interaction and political structure, the interactions between settled agriculturalists, herders, traders, and fishermen are discussed.

Holley, G. R. (see Dalan, R.)[60]

Hollowell, J. Lee (Consultant)
[42] REASSESSMENT OF THE FORTALEZA, OLLANTAYTAMBO, PERU

The Fortaleza is a well-known site whose remarkable stonework has been attributed to the late Inca period. Careful analysis of the architecture and the craftsmanship of stoneworking, however, reveals that it is a much more complex and enigmatic site than conventionally thought. Five distinct styles of architecture and craftsmanship can be recognized, suggesting five separate periods of constructions/demolition. The present central feature, the Templo del Sol, is a reconstruction of elements dismantled from an earlier building. There is substantial evidence that it had been located in the valley below, where the Catholic church now stands. A number of the characteristics of the stonework are clearly related to those of Tihuanaco, Bolivia.

Hoores, John W. and Geoffrey G. McCafferty (SUNY-Binghamton)
[62] OUT OF MEXICO: AN ARCHAEOLOGICAL EVALUATION OF THE MIGRATION LEGENDS OF GREATER NICOYA

Historic documents of Greater Nicoya record migration legends in which the inhabitants traced their ancestry to central Mexico. Excavations from the later pre-Columbian periods indicate a strong but poorly defined "Mesoamerican" influence. These legends are critically examined and their archaeological implications are reviewed. The material culture of the "Mixteca-Puebla" style is discussed, relevant regional chronologies of Mexico and Central America are reviewed, and the implications of migration legends are evaluated with special emphasis on the identification of ethnic groups in the archaeological record.

Hoskinson, Charles Tom (Bowers Museum)
[78] FOUR SUNS WIDE: CALENDRIAL INVESTIGATIONS AT A TOHONO O'ODHAM SITE

The site is a "Fortified Hill" or "Trincheras" site located on the Tohono O'odham Reservation in Arizona. This site has many short, low, dry masonry walls which are concentric to the hill. Tohono O'odham consultants state that things were grown there and that "it was a place where ceremonies were held," but the excavations of the hill, there is an east facing wall and leaning against it, is an east facing wall and leaning against it, is a large rectangular stone. One of the consultants believes that this monument stone stands one stands to watch the sun. This investigation explores that hypothesis.

Houston, Sarah (Vanderbilt)

The explosion of recent research on Maya hieroglyphics throws much light on the Classic period (ca. A.D. 250-900). Yet, until now, there have been few explicit evaluations of the reliability and quality of such records and historical documents. This paper assesses the sources of Classic Maya history and examines their usefulness for the study of Maya society.

Houston, S. (see Demarest, A.)[11]

Hsu, J. T. (see Richardson, III, J. B.)[28]

Huber, Edgar (Washington State)
[53] GREEN LIZARD SITE: EXCAVATIONS AT A LATE PUEBLO III SMALL HABITATION

An overview of the two seasons of excavation at Green Lizard, a small, late Pueblo III habitation in southwestern Colorado is presented. Recovered information suggests intensive site utilization characterized by deep midden deposits, extensive room construction and expansion events, and remodeling in the kiva. Significantly, excavations have also revealed unexpected constructional variability not normally associated with Pueblo III period sites in the area. The kiva was not masonry lined, surface, rooms, in some cases, are three deep, and several trash-filled midden deposits, apparently dating to late Pueblo III, are present in the plaza adjacent to the kiva.

Hudson, Charles (Georgia), John Worth (Florida) and Chester DePratt (South Carolina Institute of Archaeology & Anthropology)
[1] REINVESTIGATION OF DE SOTO'S ROUTE THROUGH GEORGIA AND SOUTH CAROLINA

Since the publication in 1984 of the Reconstruction of Hernando De Soto's route from Apalachee to Chiaha by Hudson, Smith, and DePratt, several advances have been made in both documentary and archaeological research. In some instances these advances make possible a more precise reconstruction of this segment of the route, and in other instances they raise questions about our interpretation of the social geography which can only be answered through additional research.
second problem is less amenable to a technical fix. It involves linking patterns of exchange (deduced from distributional data) with models for the origins of social complexity in island settings.

Hunt, T. (see Graves, M. W.) [74]

Hutchinson, Dole L. (Illinois)
[1] POSTCONTACT BIOCULTURAL CHANGE: MORTUARY SITE EVIDENCE

Discussions pertaining to the period of European exploration and colonization of the New World have often focused on changes in patterns of health and disease for Native American populations. The role of data derived from mortuary sites in answering questions of the biological consequences of European contact and at what level changes in health and disease can be detected in the archaeological record is examined. Tatham Mound, an early contact period site in northwest Florida, serves as a central point of discussion for these issues.

Hutchinson, D. L. (see Larsen, C.) [44]

Hyland, David, James M. Adovasio, J. M. Tersak and M. T. Siegel (Pittsburgh)
[39] A NEW TECHNIQUE FOR THE IDENTIFICATION OF RESIDUAL BLOOD ON ARTIFACTUAL MATERIALS

Recent advances in molecular biological techniques have enabled researchers to identify the species of blood residues found on archaeological materials. The enzyme immunoassay technique, developed by the Cultural Resource Management Program of the University of Pittsburgh, utilizes a nitrocellulose protein-binding membrane and affinity absorbed antibodies, and avoids many of the problems inherent in other types of assays. Samples eluted from an endscraper collected at the Shoop site (11,000 B.P.), central Pennsylvania, have been positively identified as belonging to the cervid family. Research on genus determination of this sample is discussed as well as new methods of protein recovery and antibody purification. The ramifications of the successful implementation of this technique are discussed in terms of Paleoindian artifact function and paleoecological, paleoenvironmental, and paleodiagnostic reconstruction using a case study from the Shoop site in central Pennsylvania.

Hyland, J. (see Wake, T.) [35]

Iceland, Harry (Texas-San Antonio)
[69] LITHIC ARTIFACTS AT THE TEOTIHUACAN MERCHANTS’ BARRIO

Obsidian and chert artifacts from the Teotihuacan Merchants’ Barrio were analyzed to determine: 1) flaked stone tool manufacturing processes and 2) icosahedral activities taking place at the site, 3) the extent and nature of the foreign contacts of its inhabitants, and 4) evidence of internal and external differences in social status. Technological analysis indicates most tools were produced within one of four industries, in proportions typical of Classic Teotihuacan, and small numbers appear to have been imported from as far as the Maya region. Hemimorphic residues on working edges are suggestive of low-level craf specialization.

Ilett, Michael (Centre de Recherches Protohistoriques)
[9] FORAGER-FARMER INTERACTION IN THE NEOLITHIC OF NORTHERN FRANCE

The current evidence for interaction between foraging and agriculturalist groups in the Neolithic of northern France is outlined for the early fourth millennium B.C. The possible effects of this interaction on the subsequent development of agriculturalist groups in this region are discussed.

Irwin-Williams, Cynthia (Desert Research Institute)
[58] THE POSITION OF WOMEN IN AMERICAN ARCHAEOLOGY: 1930-1988

The place of women in American Archaeology from 1930-1988 is reviewed with a focus on the changes which have occurred in the training of professional social roles and positions which women have held in the last half century. Also considered is the degree to which “equality” with male colleagues has been obtained at various periods and in various areas of professional activities. The contributions of several key figures will be profiled.

Irwin, Geoffrey (Auckland)
[74] COLONIZATION AND EXCHANGE FROM LAPITA TO THE KULA

A closer definition of the method of colonization of the remote islands of the Pacific allows a distinction to be made between items which accompanied the initial expansion and those associated with subsequent exchange between established settlements. Both of these situations contrast with the context and content of exchange systems which had developed by late prehistoric times in coastal Papua New Guinea.
Isaac, Barry L. (Cincinnati)
[64] DEFINING THE ECONOMY FOR THE STUDY OF EARLY PALEOINDIANS
Two concerns expressed by archaeologists to the editor of Research in Economic Anthropology are examined: 1) the differences between cultural ecology and economic anthropology, and 2) the scope of economic analysis. Economy is treated as the specific mechanisms and processes—production, consumption, exchange—of human ecological adaptation; economy is neither synonymous with nor restricted to food subsistence in primitive economies, any more than it is in our own case. The relevance of modern hunter-gatherers to the study of Paleoindian economies is assessed, especially with respect to optimal foraging models.

Isenring, W. (see Dalan, R.) [60]

Isen, C. R. (see Granellon, K. F.) [27]

Jackson, H. Edwin and Susan L. Scott (Southern Mississippi)
[36] MISSISSIPPIAN HOMESTEAD-VILLAGE SYMBOISYS: FAUNAL EXPLOITATION IN THE TOMBIGBEE VALLEY
Faunal assemblages from the Lubbock Creek Archaeological Locality and the Yarborough Site (22CLB14) in the Tombigbee River Valley are contrasted. Differences in the assemblages are suggested to reflect the interdependent economic relationship between small single family homesteads and larger Mississippian villages.

Jackson, Lawrence J. (Southern Methodist)
[19] CHESTNUTS IN THE FIRE: SEASONALITY AND SETTLEMENT INDICATORS FOR THE EARLY WOODLAND IN ONTARIO
Subsistence and seasonality data for the Early Woodland period in Ontario have relied on inferences drawn from scatter data. The increasing pace of site discovery and excavation is beginning to provide a strong data base for cultural and settlement pattern observations. While the data concept of Carolinian/Canadian Biotic Provinces does investigation into the reality of environmental conditions from 1-1000 B.C., the application of archaeobotanical, macro- and micro-faunal, and radiocarbon analyses to small site features suggests that new inferences regarding Meadowood phase subsistence are possible. Detailed information is drawn from the Dawson Creek site in south-central Ontario.

Jackson, N. J. (see Ellis, C. J.) [64]

Jackson, Thomas L. (Archaeological Research Facility, UC-Berkeley)
[18] WOMEN'S PRODUCTION AS SOCIAL AND ECONOMIC FOCUS
The way in which women's innovations in technology related to subsistence resources procurement and processing were fundamental elements in the social and economic organization of certain California Indian groups is explored. The innovation of permanent, fixed milled facilities (bedrock mortars) used exclusively by women for processing the acorn dietary staple emphasized the organization of intra- and inter-site space along gender lines. Aspects of this organization can be re-created archaeologically. Theoretical and methodological implications of this sort of "engendered" prehistory are discussed.

Jackson, T. L. (see Love, M.) [38]

Jackson, T. L. (see Arroyo, R.) [35]

Jameson, John (US Army Corps of Engineers)
[33] CO-MANAGEMENT OF VANDALIZED SITES: OPPORTUNITIES AND PROBLEMS
The Anthony Sholes site in Georgia is one among many that are co-managed among agencies. Co-management of public lands, and the sites on them, presents some very interesting challenges. These challenges, opportunities for site protection, and management problems are discussed.

Jeffries, Richard W. and Michael J. Shott (Kentucky)
A common argument holds that labor requirements of economic practices determine settlement patterns in small-scale agricultural societies. Specifically, extensive agriculture is linked to aggregated settlement and intensive agriculture to dispersed settlement. This reasoning is evaluated in the study of Childers and Woods of Late Woodland sites on the Ohio River in West Virginia. Economic practices are documented through detailed studies of faunal, botanical, lithic and ceramic assemblages. Particular attention is paid to changes in resource diversity associated with agricultural intensification. Settlement patterns suggest that these sites represent successive stages of community aggregation and dispersal possibly linked to sociopolitical as well as economic trends.

Jefferson, N. D. (see Riggs, B.) [52]

Jelks, Edward B. (Illinois State)
[38] ETHICS, PROFESSIONALISM AND ARCHAEOLOGY
Standards of ethical behavior have been codified for practitioners of certain professions (e.g., law, medicine, engineering, the priesthood, and archaeology). This paper reviews existing ethical standards for archaeology, compares them to standards of other professions, evaluates their effectiveness, and identifies some ethical problem areas of particular moment to the archaeological community of the United States.

Jeske, Robert (Indiana-Purdue-Ft. Wayne)
Upper Mississippian lithic technology is characterized by a lack of formal tool types. Triangular bifaces, pitted spokeshaves, and utilized flakes make up the majority of late prehistoric assemblages in the Upper Midwest. Time and energy stresses inherent in a marginal horticultural society did not allow for an energy-intensive lithic procurement and production strategy. An expedient, bipolar technology was utilized to reduce locally available, poor quality lithic resources. Data from several sites are used to examine the relationship between social organization and energy input into lithic technology.

Johnson, Gregory (Hunter)
[59] UMM QSEIR IN SYRIA AND LATE URUK IN GREATER MESOPOTAMIA
The late fourth millennium witnessed cultural development of unprecedented scale and complexity over much of greater Mesopotamia. This was a period of only a few generations in which we recognize the remarkable formal similarity in material culture from southwestern Iran to the upper Euphrates. Late Uruk is usually viewed as a period of expansion in which a polity or set of polities sought to control access to scarce and valuable materials in regions beyond resource-poor Mesopotamia. It is suggested that processes of collapse may better account for the available data from Umm Qseir and other sites of ostensible expansion.

Johnson, Ian R. (NSW National Park and Wildlife Service) and Helen S. Clemens (Sydney)
[48] BEYOND REGISTRATION: MAKING SITE REGISTERS RELEVANT TO CRM
The NSW Aboriginal Sites Register contains over 30,000 site records, consultant reports, maps, and photographs. A computer database with mapping and statistical capabilities permits rapid response to public and professional enquiries. We are now attempting to move beyond efficient registration to an expanded role in Cultural Resource Management, by generating new information and presenting information more effectively, using GIS and predictive techniques. The paper targets the problems of generating predictive models for an extended area and computer mapping of register data.

Johnson, Lucy Lewis (Vassar)
[50] PALEOSHORELINES AND PREHISTORIC SETTLEMENT ON SIMEONOF AND CHERNAPIRA ISLANDS, OUTER SHUMAGIN ISLANDS, ALASKA
Reconstruction of the paleoshorelines of Chersnabina and Simeonof Islands using Winslow's methods allows the location of prehistoric sites on the islands to be better understood. The resources available to inhabitants of these islands were particularly rich and less sensitive to disruption than those of other islands in the Shumagin group. Therefore, they were rapidly re-inhabited following earthquakes, allowing a detailed picture of human response to changing shoreline and beach configurations to be constructed.

Jones, B. Calvin and Gary Shapiro (Bureau of Archaeological Research, Florida Dept. of State)
[44] NINE MISSION SITES IN APALACHEE
After the initial exploration of America, Spanish attempts to maintain control over native populations in the Southeast region of the present United States was achieved through the provincial mission system. Their efforts were, perhaps, most productive in Northwest Florida among the Apalachee, where eighteenth or more Franciscan doctrinas were established between 1655-1704. We are just beginning to examine the conditions of that system and its impact on a population of 10,000 souls. Archaeological data gleaned primarily from our research over the past twenty years indicates that mission implantation and architecture appears unique to the Apalachee cultural and environmental setting.
Kay, Marvin (Arkansas)

[49] PROSPECTS FOR ARCHAEOLOGICAL SEASONALITY ESTIMATES BASED ON MODERN ODONTOCOELS VIRGINIANUS CEMENTUM

Petrographic thin sections of mandibular first molars of Arkansas deer of known data of death and sex revealed characteristic cementum annuli. Their usefulness along with total cementum thickness as independent aging techniques essential to seasonality estimates is assessed by comparison with age estimates derived from mandibular tooth eruption and wear. Results indicate: 1) a probable early spring...
period for cement annulus formation, 2) likely resorption of annuli in deer older than 48-60 months, 3) varying degrees of imprecision in seasonality estimates using annuli or cementum thickness due to the unknown time of birth and species of midwestern archaeological deer.

Kealhofer, Lisa, J. R. Richards and B. J. Baker

[55] MORTUARY RITUAL AND SPATIAL PATTERNING: THE NORTHERN CEMETERY, ABYDOS, EGYPT

Abydos, an important cemetery and town site during the pharaonic period in Egypt, is located in Upper Egypt, north of Luxor. Believed to be the burial place of the head of Osiris, Abydos was a major focus of mortuary ritual. Recent (January - June 1988) fieldwork in the Northern Cemetery at Abydos revealed major shifts in the spatial patterning of burials, reflecting changes in access to the cemetery throughout the Middle and New Kingdoms. These shifts are linked not only to alterations in religious ideology and mortuary ritual, but also to Abydos' changing politico-economic role in pharaonic Egypt.

Keegan, William F. (Florida Museum of Natural History)

[50] LUCAYAN SETTLEMENT PATTERNS AND RECENT COASTAL CHANGES IN THE BAHAMAS

The Bahamas are composed of marine sediments and wind transported sands that were sculpted by wind and sea during the Pleistocene. Following their creation atop the subsiding Bahamas Platform these low-lying carbonate islands have been continuously reshaped by erosional and depositional processes. The only documented prehistoric occupation was by Lucayan Tainos (A.D. 700-1520), whose villages were located in coastal settings. Archaeological surveys have revealed that our knowledge of Lucayan settlement behavior is strongly influenced by the effects of these processes. Recent changes in coastal geomorphology with regard to Lucayan settlements are discussed.

Keel, Bennie C. (National Park Service) [Discussant 27]

Keel, Bennie C. (National Park Service) [Discussant 23]

Kelley, Jane H. (Calgary)

[58] BEING AND BECOMING

Accepting the premise that sociological aspects of science have an impact on its practice, it is argued that archaeologists would benefit from a clearer understanding of certain sociological matters. Recruitment into the discipline and survivorship in the professional ranks are discussed from a personal perspective. Variables involved in recruitment may apply to both men and women, problems of survivorship are particularly acute for women. The current lack of understanding of such variables results in each woman's history appearing idiosyncratic, however, career patterns for women may show more commonality than is usually recognized.

Kellogg, Doug (Maine)

[68] PALEOENVIRONMENTAL RECONSTRUCTIONS AND THE FORMATION OF MAINE COASTAL SETTLEMENT PATTERNS

Geological and paleoclimatic studies have provided relevant environmental contexts for archaeological research along the central Maine coast. The challenge has been to integrate paleoenvironmental and archaeological data at the proper scales. Assuming that archaeological settlement patterns reflect human decision making, this paper considers information about the environment as a unifying concept for modeling the formation of settlement patterns within a changing landscape.

Kelly, John (Southern Illinois-Edwardsville)

[36] EMERGENT MISSISSIPPIAN COMMUNITY AND HOUSEHOLD ORGANIZATION IN THE AMERICAN BOTTOM

Emergent Mississippian represents a transitional unit during which certain subsistence and demographic changes occurred. These changes had to varying extents a major impact on the organization of society at both the household and community level. Hence many of the elements of Mississippian community organization were in place prior to its crystallization. Emergent Mississippian household and community organization is examined in light of its origins and its role in the ultimate development of Mississippian culture in the American Bottom region of the central Mississippi valley.

Kelly, Robert L. (School of American Research) [Discussant 41]
the height of its development. Intra-assemble variability suggests productive and socio-economic differentiation among the large number of households comprising Middle Classic Matacapan.

**King, Eleanor (Pennsylvania) and Daniel Potter (Harvard/Texas-Austin)**

[46] SMALL SITES IN PREHISTORIC MAYA SOCIOECONOMIC ORGANIZATION: A PERSPECTIVE FROM COLHA, BELIZE

Traditional approaches to prehistoric Maya socioeconomic organization implicitly rely on certain assumptions about the relative complexity of large and small sites. Large sites are expected to exhibit marked functional diversity, economic specialization, and social differentiation. This complexity is thought to have evolved from their early control over critical resources. Small sites, by contrast, are viewed as structurally more homogenous, dependent on the large sites for specialized service and products. Recent data from the small site of Colha, Belize, challenge these assumptions. This paper discusses problems with the traditional view and suggests alternative perspectives on Maya socioeconomic organization and its development.

**Kintigh, Keith W. (Arizona State) [Discussant 17]**

**Kirch, Patrick (UC-Berkeley)**

[74] SPECIALIZATION AND EXCHANGE IN THE LAPITA CULTURAL COMPLEX OF OCEANIA (1,500-500 B.C.)

The Lapita Cultural Complex spans more than 4,500 kilometers across the southwestern Pacific, representing the colonization of this island world by Austronesian speakers. For several centuries following colonization, Lapita communities maintained long-distance exchange interaction over distances up to 2,500 kilometers. Drawing upon recently excavated artifact arrays from the Mussau Islands (Bismark Archipelago), the Western Lapita exchange network is examined. Evidence for specialization in the production of shell exchange valuables is presented, as well as for the importation of exotic goods (ceramic, obsidian). The significance of these data for understanding the history of inter-island exchange in Melanesia is explored.

**Klippel, W. E. (see Morey, D. F.) [43]**

**Knoebel, Heidi (New York)**

[51] DESIGN VARIABILITY IN AURIGNACIAN BONE AND ANTLER PROJECTILE TECHNOLOGIES

Analysis of Aurignacian bone and antler projectile points has revealed both inter-regional and intra-regional variation and similarity. Contemporary differences and chronological changes are discussed in terms of technological innovation. Contemporary patterning and continuities through time are viewed as technological design strategies with which the Paleolithic artificians addressed their raw materials. Site-specific as well as region-specific distinctions in projectile point form and design will be delineated.

**Knight, Vernon James, Jr. (Alabama)**

[52] MISSISSIPPIAN SOCIAL ORGANIZATION

Paul Kirchhoff argued that so-called egalitarian clan systems, such as those found throughout Eastern North America, represent an evolutionary blind alley, in contrast to systems based on lineage and descent which are preadapted to stratification. Yet, he overlooked the latent hierarchical structure of eastern ranked clan systems. In ethnohistorical grounds, I contend that Mississippian stratified society emerged on a basis of ranked clan organization. Features of Timucuan aristocratic organization illustrate this thesis, key elements of which were first suggested by Joselin de Jong.

**Knudson, Gary (USFS-Ozark)**

[27] THE MANY HATS OF A CULTURAL RESOURCE MANAGER: WHAT CULTURAL RESOURCE MANAGERS CAN LEARN FROM OTHER MANAGEMENT PROGRAMS

The involvement of a Cultural Resource Manager in other management areas within the Forest Service is traced. The interaction that is required to work out solutions to problems to the satisfaction of all programs is discussed. What cultural resource programs return to the public also is explored.

**Kornbacher, Kim (British Columbia)**

[7] A METHODOLOGICAL STRIDE IN SHELL MIDDEN ARCHAEOLOGY

The progress of Northwest Coast archaeology has been hindered by the lack of a well-defined, practical methodology for the stratigraphic excavation of shell middens. The adaptation of the Harris Matrix to the complex stratigraphy of midden sites is a first step in the development of such a method. A step-by-step description of matrix construction—in the field and in the laboratory—and an explicit discussion of the subsequent correlation and interpretation of depositional events, provide a valuable theoretical framework for Northwest Coast and other shell midden archaeologists.
Laporte, Juan Pedro and Vilma Fialko

Lafferty, III, Robert H. (Mid-Continental Research Associates) and Neal H. Lopatin (Southern Illinois-Edwardsville)

[36] MISSISSIPPIAN HOUSEHOLD ORGANIZATION AND SUBSISTENCE DURING THE MID-FOURTEENTH CENTURY, BUFFALO NATIONAL RIVER, ARKANSAS OZARKS
Archaeological excavation in 1986 at the Erbie campground situated along the Buffalo National River in the Arkansas Ozarks resulted in the identification of a Mississippi period house and associated features. This homestead dated to the mid-14th century, and consisted of a 48 m x 36 m individually set post structure and seven internal posts with excellent faunal and floral preservation. A wide range of cultivated (maize, beans, squash, chenopodium, sunflower, little barley) and wild (deer, fish, birds) species are represented suggesting year-round occupation. Spatial and functional analysis of the plowzone artifacts define three household activity areas, domestic, stoneworking, and sleeping.

Lambert, Joseph B. (Northwestern) [Discussant 57]

Lancaster, William (British Institute of Archaeology)

[72] TRIBAL FORMATIONS IN BEDOUIN ARABIA
The physical, economic and political environment of Arabia is essentially unpredictable. Bedouin ideology emphasizes individual and group autonomy and jural equality, successful responses to the above unpredictability. The resulting tribal formations reflect complex interactions between the practicalities of multi-resource pastoralism, the symbiotic relationships with other parts of the total Arabian society, and the demands of ideology. The dynamics of tribal formations may be seen as a function of the internal logic of Bedouin discourse and expresses itself in some interesting conceptualizations.

Landers, Jane (Florida)

[22] AFRICAN PRESENCE IN EARLY SPANISH COLONIZATION
Africans participated in the earlier Spanish efforts of exploration and colonization and were a significant element in the multi-ethnic culture of the sixteenth-century Caribbean and Southeast. Most were slaves upon whom the Spanish depended for labor and military support. Others became free through freedom of service or by availing themselves of Spanish legal institutions. Despite Spanish efforts to maintain racial separation, African interaction with Spanish and Native American peoples took many forms. Although certain broad patterns may be discerned, local circumstances shaped each inter-ethnic context. The African experiences in the southeast and Caribbean are examined, with a particular focus on St. Augustine.

Lange, Frederick (Colorado Museum)

[75] THE BAY OF SALINAS—COASTAL CROSSROADS OF GREATER NICOYA
The Greater Nicoya Archaeological Subarea is divided into a northern sector (Pacific Nicaragua) and southern sector (Nicoya Peninsula, Costa Rica). The Bay of Salinas lies at the juncture of these two sectors. Recent studies of the distribution of jade, ceramic types and varieties, and obsidian (supported by neutron activation and x-ray diffraction data) also shed light on the Bay of Salinas region as part of Greater Nicoya, and of Greater Nicoya as a subarea of the southern periphery of Mesoamerica.

Langford, Jr., James B. (The Coosawattee Foundation)

An artifact found at the Poarch Farm site (9GOI) in northwest Georgia gives supporting evidence of the visit of the de Luna expedition to the area in 1560. The artifact, an engraved and enamelled copper plate, was likely made by an Aztec Indian in central Mexico during the mid-sixteenth-century. The scene depicted on the plate depicts post-conquest Aztec characters in the European religious iconographic scene, probably the Annunciation to the Virgin or the appearance of the Woman of Meditation (the Apocrypha). The plate personifies the cultural exchanges taking place in the sixteenth century Western Hemisphere.

Langford, Jr., J. B. (see Hall, D. J.) [1]

Laporte, Juan Pedro and Vilma Fialko (Dumbarton Oaks)

The identification of the “Mundo Perdido” as Tikal’s astronomical complex permitted the detection of the site’s first ritual center, dating to the end of the Middle Preclassic (Tec phase). The later appearance of a similar complex at Uaxactun, dating to the beginning of the Chicaneel horizon, has sociopolitical implications for the territorial definition of centers in the central Maya lowlands, as well
as for the drastic changes in political structure that occurred at the inception of the Late Classic. In a comparative presentation, and as proof of the political character of these complexes which celebrate the solar transit, we present new evidence of sites that mark their reduced territories by using such complexes during the Late Classic period in the southern region of Peten, Guatemala.

Lara-Pinto, Gloria (Instituto Hondureño de Antropología e Historia/Kentucky)

[62] INDIGENOUS COMMUNICATION NETWORKS IN 16TH-CENTURY HONDURAS: THE ETHNOHISTORICAL EVIDENCE

The well known natural corridor that traverses Honduras from the North Coast through the Comayagua Valley to the Pacific Ocean has been assumed to be a route of transport and exchange in prehistoric times. The existing ethnohistorical evidence for this and other associated routes in Central and North Honduras will be presented in an attempt to clarify its implications for the regional cultural interaction at the time immediately prior to the Spanish conquest.

Larralde, Sigia (New Mexico) and Phillip Shelley (Eastern New Mexico)

[12] TCHAMAHIAS: THE MANUFACTURE, USE, DISCARD, AND SUBSEQUENT CURATION OF A PREHISTORIC IMPLEMENT

Tchamahas, the most distinctive and beautiful of Southwestern lithic implements, are highly polished “hoses” made of silicified shales from the Four Corners area and dating to the Meso Verdean occupation of the San Juan River drainage. Through archaeological survey, use-wear analysis, analysis of breakage patterns, and ethnographic research, we have been able to reconstruct the “life history” of tchamahas from quarrying, to final polishing and hafting, to use, refurbishing, use of debris by-products, discard, and ultimate curation as ceremonial objects by modern Pueblo Indians. The regional distribution of tchamahas provides further information about their history and function.

Larsen, Clark (Northern Illinois), Margaret J. Schoeninger (Harvard), Katherine F. Russell (Kent State) and Dale L. Hutchinson (Illinois)

[44] BEYOND DEMOGRAPHIC COLLAPSE: BIOLOGICAL ADAPTATION AND CHANGE IN NATIVE POPULATIONS OF LA FLORIDA

Much of the research on the biological consequences of the arrival of Europeans in the New World has focused on the catastrophic effects of Old World pathogens and demographic collapse. Equally important to a broader understanding of the consequences of contact, however, are questions relating to how native populations responded and adapted to great social, dietary, and behavioral changes representing in some instances long periods of time. In this regard, diachronic changes in La Florida are examined through the study of anatomy, bone chemistry, demography, and markers of stress.

Larsen, Curtis (U.S. Geological Survey)

[72] PALEOENVIRONMENTS AND SETTLEMENT IN PREHISTORY SOUTHEASTERN ARABIA

Settlement in eastern Arabia is very sensitive to changes of climate and, in coastal areas, of sea level. Ongoing geomorphological and archaeological fieldwork in the ‘Jaalan region of Oman reveals the local paleoenvironment of hunter-gatherer and of more recent agricultural and pastoralist communities, both in the interior and along the coast. These results are then viewed on the wider regional scale of southern Arabia as a whole.

Larsen, Daniel O. (California State-Long Beach), Joel Michaelson and Phillip L. Walker (UC-Santa Barbara)

[37] CLIMATIC VARIABILITY: A COMPOUNDING FACTOR CAUSING CULTURE CHANGE AMONG PREHISTORIC COASTAL POPULATIONS

The prehistory of coastal populations has attracted considerable attention since it often provides a context in which many complex hunter-gatherer sociopolitical forms evolved. This paper discusses the promise of an explanatory model which considers the effects of population growth and extreme shifts in environmental conditions to explain the tempo of cultural change for California’s prehistoric coastal populations. Recent dendroclimatic research coupled with paleoceanographic sea-temperature reconstructions provided an unprecedented opportunity to examine regional changes in marine and terrestrial environmental conditions. The preconditions of population growth and prior adaptive adjustments set the levels of risk sensitivity to extreme climatic events and controlled the tempo of culture change.

Lennstrom, Heidi A. (Minnesota)

[42] CHANGING RESOURCE UTILIZATION IN LATE PREHISTORIC PERU: AN ANALYSIS FROM THREE PUNA SITES

Recent excavations in the upland puna region of highland Peru focused on three late prehistoric sites. Based on ceramic evidence the sites are assigned to the Late Intermediate Period (pre-Inca) and the Late Horizon (Inca). Analysis of botanical remains indicates a shift between the two time periods, showing an apparent increase in domestica, and an increasing differential distribution of plant remains across

Lavilley, Henri (Institut du Quaternaire-Bordeaux)

[2] RECENT DEVELOPMENTS IN THE STRATIGRAPHY AND PALEOENVIRONMENTAL CONTEXT OF MIDDLE PALEOLITHIC OCCUPATIONS IN THE CIRCUM-MEDITERRANEAN

Recent observations during excavations in the caves of Carihuela (Andalucia, Spain), Temnata (Bulgaria), Karain (Turkey), Kebara (Israel) and the open-air sites of Kadar and Zobiste (Yugoslavia) have provided original data on the stratigraphy and paleoenvironmental context of the Middle Paleolithic and of the transition to the Upper Paleolithic in the area surrounding the Mediterranean.

Lavin, Lucianne (Archaeological Research Specialists)

[19] IMMIGRATION AND INNOVATION: THE LATE ARCHAIC/WOODLAND INTERFACE IN SOUTHERN NEW ENGLAND AND SOUTHERN NEW YORK

Traditional interpretations of the origins and relationships of Lannock and other Nanticoke traditions in the Late Archaic of Northeastern North America, and the subsequent appearance of Early Woodland Adena-like burial complexes, have focused on the questions of what, when and where. Recent archaeological and paleoenvironmental studies allow us to reevaluate traditions on Late Archaic and Woodland immigration and ceremonial innovation, and to generate explanatory models of why and how these cultural phenomena occurred.

Lawlor, Elizabeth J. (UC-Riverside)

[49] TAPHONOMY OF PHYTOLITHS IN THE MOHAVE DESERT: A PRELIMINARY REPORT

Phytolith analysis may provide previously unattainable archaeobotanical information about open desert sites. A prerequisite to interpreting phytoliths in terms of human behavior (e.g., windbreak construction or seed harvesting) is an understanding of phytolith taphonomy in such desert conditions as alkalinity, wind erosion, and possible abrasion by sand. This report gives preliminary results of phytolith extractions from Mohave Desert grasses and dicots, surface litter, and pinch samples taken in conjunction with ecological transects. Applications to an archaeological project underway will be discussed.

Lebo, Cathy J. (Indiana)

[12] SETTLEMENT CONTINUITY AND ADAPTIVE RESILIENCE IN THE NORTHERN SOUTHWEST

Critics of traditional time-space frameworks in southwestern prehistory argue that prior reconstructions obscure behavioral diversity. Efforts to demonstrate the variety and resilience of adaptive strategies require sufficiently fine-scaled methods that anticipate cultural heterogeneity. This study examines changes in median occupation span in a sample of excavated sites from Black Mesa, Arizona. Occupation span reflects multiple variables including structure site and replacement, length of agricultural fallow, seasonal mobility, and population aggregation and growth. Settlement data are analyzed using survival models to provide a measure of short-term cultural responsiveness to environmental and demographic change.

Leibsohn, Dana (UCLA)

[75] GREATER NICOYA CERAMICS: ICONOGRAPHY FOR ELITE INTERACTION

Elite polychrome ceramics from Greater Nicoya represent one of the primary indicators of inter-regional contact in prehistoric lower Central America. Recent analysis of the content and distribution of iconography in Greater Nicoya ceramics from the Middle Polychrome Period (800-1350 A.D.) reveals important relationships among a variety of ceramics from Honduras, Nicaragua and Costa Rica. Furthermore, iconographic relationships among Middle Polychrome Greater Nicoya and Mayoid ceramics indicate that a diffusion of ideas occurred, but ideas did not simply filter from north to south. Rather, a pattern in iconographic formation emerges with multiple cultural boundaries marking varying intensities of elite interaction. This paper focuses on the iconography of Greater Nicoya polychrome ceramics and explores the implications of iconographic relationships as indicators of inter-regional and intra-regional elite contact during the Middle Polychrome Period.

Lennstrom, Heidi A. (Minnesota)

[42] CHANGING RESOURCE UTILIZATION IN LATE PREHISTORIC PERU: AN ANALYSIS FROM THREE PUNA SITES

Recent excavations in the upland puna region of highland Peru focused on three late prehistoric sites. Based on ceramic evidence the sites are assigned to the Late Intermediate Period (pre-Inca) and the Late Horizon (Inca). Analysis of botanical remains indicates a shift between the two time periods, showing an apparent increase in domestica, and an increasing differential distribution of plant remains across
Long, Austin, B. F. Benz, D. J. Donahue and A. J. Jull

the interior southeastern United States. These sites may represent communities in the large chidom of Coctacuchqui, but they contain diverse material assemblages, suggesting diversity in the native cultures. This diversity would require flexible Spanish responses. Although archaeological evidence of Spanish contact is currently limited, the investigation of these sites contributes to our understanding of the local native societies which have previously only been known through the Spanish chronicles.

Lewarch, Dennis E. (Evans-Hamilton, Inc.), Cheryl A. Mack (USFS-Gifford Pinchot) and James R. Benson (Evans-Hamilton, Inc.)

[37] ARCHAEOLOGY IN THE HINTERLAND OF FORT ROSS, CALIFORNIA

A study of coastal hunter-gatherers is being undertaken in the hinterland of Fort Ross, an early 19th century Russian furion and trade center in the North Coast Ranges of California. The purpose of the fieldwork is twofold. One is to delineate prehistoric subsistence-settlement patterns. The other is to evaluate the overall impact the Russian/Aleut community had on indigenous Pomo people. Preliminary results of the project are presented.

Lindauer, Owen (Arizona State)

[14] UNDERSTANDING STYLISTIC DIVERSITY OF PAINTED CERAMIC DESIGNS: AN INVESTIGATION OF HOHOKAM RED-ON-BUFF VESSELS

Stylistic variation can result from choices made by the potter relating to constraints of a vessel’s size and shape as well as the manner in which designs fit and cover space. Design diversity analysis is conducted on a set of prehistoric Hohokam red-on-buff vessels having differing functions, design fields, and inferred levels of public visibility. Motif, element, and layout styles are compared with expectations for characteristics of diversity expected for stylistic information exchange as well as variability that is a product of production choices made by the potter. Suggestions are offered regarding evidence that identifies the various factors affecting stylistic variation.

Lindly, J. (see Clark, G. A.) [24]

Lipe, William (Washington State), Bruce Bradley, Mark Varien (Crow Canyon Archaeological Center) and Michael Adler (Michigan)

[12] THIRTEENTH CENTURY ANASAZI COMMUNITY ORGANIZATION IN SOUTHWESTERN COLORADO: THE SAND CANYON ARCHAEOLOGICAL PROJECT

The scale and complexity of prehistoric Southwestern Pueblo societies is a topic of considerable debate. The Sand Canyon Project is investigating thirteenth century Pueblo organization at the community and locality levels. Fieldwork has included excavation of approximately eight percent of Sand Canyon Pueblo (a site of roughly 400 rooms, kivas, and towers), testing of five nearby hamlets, and survey of about 30 square kilometers. Preliminary assessment is made of 1) internal chronology and differentiation at Sand Canyon Pueblo, 2) relationships between this large site and the small ones nearby, and 3) locality population and settlement pattern.

Little, B. J. (see Shackel, P.) [54]

Little, E. A. (see Medaglia, C.) [67]

Little, K. J. (see Curren, C.) [1]

Long, Austin (Arizona), B. F. Benz (Guadalajara), D. J. Donahue and A. J. Jull (Arizona)

[39] FIRST DIRECT AMS DATES ON EARLY MAIZE FROM TEHUACAN, MEXICO

The Tehuacan region in Central Mexico is thought to be the locale of origin of Zea mays, or maize, a cultivated plant pivotal in the development of agriculture in the Americas. The age of the earliest maize and its rate of dispersal are thus important components of cultural development in the New World. We have secured permission from the Federal Government of Mexico to date critical specimens from Tehuacan, which represent what are probably some of the earliest known stages of maize's
Longacre, William A.

[31] LONGITUDINAL ETHNOARCHAOLOGY: THE KALINGA PROJECT OVER 15 YEARS

Ethnoarchaeological fieldwork was initiated among the Kalinga, a "tribal" society of the mountains of northern Luzon, Philippines, in 1973. Periodically since then, additional fieldwork focused upon pottery was carried out. During 1987-88 a major ethnoarchaeological project was completed greatly broadening the data base to include other realms of material culture in addition to pottery. This paper examines the special kinds of perspectives that 15 years provides for the planning of such research and its implementation. This is illustrated by the following of a population of more than 2,000 pots in use over those 15 years.

Lopinot, N. H. (see Woods, W. J.) [60]
Lopinot, N. H. (see De Mott, C. A.) [76]
Lopinot, N. H. (see Lackey, R. H.) [36]

Loring, Stephen (South Carolina)

[19] AN EARLY WOODLAND CACHE FROM LABRADOR: PERCEPTIONS ON RITUAL AND CEREMONY IN THE "FAR NORTHEAST"

Recent work in Quebec and the Maritimes has significantly altered our perceptions of the diffusion of Early Woodland ceremonial activities. Mortuary ritual, including mound construction and elaborate burial practices associated with exotic artifact classes, demonstrates the pervasive nature of certain aspects of hunter-gatherer social dynamics throughout the "Far Northeast." An isolated cache of stone tools discovered at Daniel's Rattle on the central Labrador coast is attributed to an Early Woodland manifestation. The remarkable similarities between the materials recovered from Daniel's Rattle with those from other Early Woodland mortuary contexts are discussed within a framework of the social strategies that would facilitate the flow of information among dispersed populations of hunter-gatherers.

Love, Michael (UC-Berkeley) and Thomas L. Jackson (Archaeological Research Facility, UC-Berkeley)

[35] MIDDLE FORMATIVE EXCHANGE IN PACIFIC GUATEMALA: SOURCES OF OBISDIAN FROM LA BLANCA

The lithic assemblage of La Blanca includes the earliest prismatic blades known from the Pacific coast of Guatemala. These blades were not made at the site, but were imported already formed. Nearly all of these blades can be attributed to one of three sources: El Chayal, Inxtetepex, and San Martin Filotepeque, but the relative percentages of material from these three sources changes significantly during the course of the Middle Formative, and contrast sharply with the percentages for other classes of obsidian tools manufactured at the site. This suggests that Formative obsidian trade consisted of multiple exchange networks rather than being a monopolistic system.

Lovell, W. G. (see Lutz, C. H.) [62]

Lorris, William A. (Michigan State)

[19] VARIATION IN LATE ARCHAIC RESOURCE AVAILABILITY AS A CONSEQUENCE OF LAKE LEVEL PERIODICITY IN THE HURON BASIN

Subsistence settlement models for the Saginaw Valley Late Archaic have traditionally employed a premise of stable lake elevation. Recent archaeological and geochronological data reveal this premise to be untenable. A preliminary model assessing the effects of lake level fluctuation on the Late Archaic resource base is presented, with particular emphasis on the abundance and predictability of aquatic resources. Standing interpretations of the Late Archaic adaptation in this region are assessed relative to this preliminary model.

Lovell, T. (see Bourque, B. J.) [77]

Lupo, Karen D. (Utah)

[43] A COMPARATIVE ANALYSIS OF CARNIVORE BONE MODIFICATION

Recent taphonomic studies have demonstrated that carnivores can produce distinctive patterns of bone modification. The presence or absence of these patterns can aid archaeologists in determining the origin of a faunal assemblage and the extent of carnivore modification. Faunal assemblages produced by mountain lions and coyotes are discussed. The assemblages differ dramatically in the degree of modification and some excised patterns of bone modification are absent. These differences are related to the foraging behavior of the two carnivores.

Lute, Rochelle (Northwestern)

[60] ROBINSON RESERVE: A LONGFORD TRADITION HABITAT AND MOUND SITE ON THE DES PLAINES RIVER IN CHICAGO, ILLINOIS

Three seasons of excavation at the component level Longford Tradition Robinson Reserve site have produced a wealth of materials which elucidate the basic technological and subsistence activities of this Upper Mississippian cultural variant. Data from the analysis of lithic tools (primarily points and drills), debitage (indicating bipolar manufacture), sherds (representing the entire range of Longford forms), and a wide range of plants and animal remains (including corn, beans, and fish) are used for comparisons with other recently excavated Longford components in the Chicago area to establish Robinson Reserve's position within a regional settlement pattern.

Lutz, Christopher H. (CIRMA) and W. George Lovell (Queen's)

[62] THE MAYA OF GUATEMALA UNDER SPANISH RULE: REGIONAL VARIATIONS IN THE NATURE OF COLONIAL EXPERIENCE

Extending MacLeod's distinction between a Ladino "east" and an Indian "west" in colonial Guatemala, recently, poorly endowed peoples are defined. The differences between these zones affected land tenure and settlement, labor, production and exchange, economic institutions, and the conditions of social life. This paper explores the utility of the core-periphery dichotomy for a better understanding of the social history of Guatemala.

Lyman, R. Lee (Missouri)

[47] SUBSISTENCE CHANGE AND PINSIFIED HUNTING

Oregon coast mammalian faunas spanning the last 3,000 years suggest a shift towards a logistical strategy of resource procurement. One fauna, however, indicates a shift from terrestrial to marine mammals. Mortality and pinnipeds (a data indicates hunting of particular age-sex classes, and imply one pinoned taxon was overhunted via exploitation of newborns of both sexes, thereby prompting the shift from marine to terrestrial taxa. Survival of the exploited population of the other pinniped taxon was not impacted at the other site because adult breeding males were the most intensively exploited age-sex class.

Lyman, R. Lee (Missouri) [Discussant 30]

Lynott, Mark J. (National Park Service) and James E. Price (Missouri)

[52] THE LATE WOODLAND TO MISSISSIPPIAN TRANSITION IN THE EASTERN OZARK REGION, SOUTHEAST MISSOURI

Shell tempered ceramics and arrow points appear over a large area of the eastern Ozarks about A.D. 600, but resulted in negligible changes in the human adaptive strategies. During the Emergent Mississippian substage there is evidence for the appearance of maize, rectangular wall trench houses, and possibly flat mounds. Despite the appearance of these Mississippian cultural elements, eastern Ozark groups maintained a high degree of autonomy. Settlement and subsistence practices continued to follow strategies which had been well established for several thousand years. Archaeological evidence from the Upper Current River drainage indicates the eastern Ozark region was abandoned by indigenous populations about A.D. 1300.

Lyon, Eugene (St. Augustine Foundation, Center for Historic Research)

[22] THE ENTERPRISE OF FLORIDA

The complex of interacting persons, groups and institutions in the Spanish Florida conquest of 1565-1577, the period of the proprietorship of Pedro Menendez de Aviles and his successors, is described. The several means of interaction between the native Americans and the intruding Europeans are examined and an attempt made to evaluate the degree to which actual contact events matched or departed from the rhetoric of "peaceful and Christian" conquest. Reasons for the failure of the Spanish settlement attempts under Menendez and his successors are investigated.

Mack, C. A. (see Lewarch, D. E.) [70]

MacKinnon, J. Jefferson and Emily M. May (Wisconsin)

[25] SMALL-SCALE MAYA LIME MAKING IN BELIZE: ANCIENT AND MODERN

Results of excavations at an Early Classic Maya coastal site are reported. The hypothesized process by which shellfish gathered in the shallow lagoon were converted to lime was tested by a replicative
experiment. Modern small-scale production methods are generally considered efficient, but in the case of ancient cultures, these methods may not be as feasible due to the limited availability of raw materials. The technological and economic constraints of the past may have influenced the production of goods, such as pottery, in these societies. For example, the production of large, fine-grained pottery may have been more time-consuming and labor-intensive than the production of smaller, simpler vessels. This could have limited the number of vessels that could be produced in a given period, leading to a more limited range of styles and forms.

MacKinnon, J. J. (see Pohl, M.) [26]

Madry, Scott (ITD Space Remote Sensing Center)
[39] REMOTE SENSING IN ARCHAEOLOGY: A REGIONAL APPROACH TO NON-DESTRUCTIVE ANALYSIS

The use of non-destructive survey, which can be applied to the analysis of archaeological sites, is a valuable tool for understanding the past. It allows researchers to gather information about the site without physically altering the site or its contents. This can be particularly useful for sites that are in danger of being destroyed by natural processes or human activities. Remote sensing techniques can be used to identify features on the surface of the site, such as pottery sherds or other artifacts, as well as to detect subsurface features, such as underground structures or hidden deposits. This can help researchers to better understand the layout and function of the site and to identify areas that may be of particular interest for further investigation.

Madsen, David B. (Utah Division of State History)
[41] TRANSPORTATION, SEASONALITY AND STORAGE AMONG MID-LATITUDE HUNTER-GATHERERS

In mid-latitudes, wintering locations are structured by a play-off between transportation costs, availability of winter resources, and the amount of and accessibility to stored summer/fall resources, making it inappropriate to explain resource utilization by simple efficiency rankings alone. Examples from the Great Basin suggest that due to high transportation costs, availability of winter resources is the critical factor in determining where wintering sites are located, rather than high-ranked but often insufficient summer/fall-available resources. Variability in this play-off is ultimately responsible for the flexibility which characterizes many mid-latitude hunter-gatherer adaptive systems.

Madsen, D. B. (see Jones, K. T.) [41]

Madsen, Mark (Wisconsin) and Robert C. Dunnell (Washington)
[52] ROLE OF MICROARTIFACTS IN DEDUCING LAND USE FROM LOW DENSITY RECORDS IN PLOWED SURFACES

Surface collection is usually the only means of obtaining land use data for large areas. Tiled surfaces present significant interpretive problems because they display only a small fraction of the plowzone artifact population for examination. Where land use and formation processes combine to produce a low density record, this sampling element can cause dissimilar records to appear identical when only macroartifacts (>=2mm) are considered. Microartifacts (<=2mm) because they have different transport properties and are typically more abundant offer a solution for such equivalences. Data from the Middle Woodland of Southeast Missouri are used to demonstrate the potential of this approach.

Magness-Gardin, Bonnie (Bryan Mawr)

Although much of the research on early civilizations in the ancient Near East has focused on large urban centers and neglected smaller rural sites, such research has had the beneficial result of providing us with records of urban relations with their hinterland villages. These include census records which inform us of the range of population and social composition of villages as well as records of taxation and land transfers. By examining these records at the urban palaces of Alalakh and Ugarit, we can reconstruct to some degree the amount of control exerted by urban centers over the allocation of land in surrounding villages and the nature and amount of craft and agricultural products mobilized for the state from rural villages. Such information is important not only for reconstructing the political economy of the state but also provides a model which may be useful in interpreting archaeological material in areas where no texts are available.

Mahieu, E. (see Villa, P.) [66]

Malors, R. L. (see Marrinan, R. A.) [11]

Martin, Patrick E., Susan R. Martin and Lawrence L. Sutter (Michigan Technological)
[76] PIECING TOGETHER COPPERWORKING TECHNOLOGY: ACCRETIONAL MANUFACTURING AT THE LAC BELLEFEUILLE SITE, MICHIGAN

Recent excavations at an aboriginal copper gathering site in Keweenaw County, Michigan (20KE20) suggest sporadic light use by metal workers as early as A.D. 450. Unfortunately for science, relic collectors removed countless numbers of large copper artifacts from archaeological contexts before
McCartney, Allen P. and James M. Savelle

of the percentage of women versus men as teachers, supervisors, or students; percentages of degrees at the Ph.D. and M.A. levels obtained by participants in these projects, and future directions taken by these women after they left Chaco.

Mathis, Mark A. (Office of the State Archaeologist-North Carolina)

[42] THE FUTURE OF STATE ARCHAEOLOGY IN NORTH CAROLINA: A PROGNOSIS

The State of North Carolina has long been a staunch supporter of archaeology and historic preservation. Even during the lean federal years of the 80's, State support held fast, with level funding. New State preservation legislation, and an overall maturation of the State in CRM and archaeological research. The future, however, remains uncertain. Some of the many problems still facing us are examined, including expanding development pressures and a dwindling resource base, changing research priorities and directions, and public education and perception. In addition, the problem of sea level rise and shoreline erosion is discussed.

Mauldin, Raymond (New Mexico) and Steve A. Tomka (Texas)

[8] AN ETHNOARCHAEOLOGICAL ASSESSMENT OF GRINDING EFFICIENCY AND GROUND STONE SIZE

Relationships between ground stone size and grinding efficiency are implicit in arguments relating ground stone to levels of agricultural dependence. Data from recent ethnoarchaeological investigations among agropastoralists in Bolivia, who process corn and chenopodium using traditional grinding equipment, suggests that increasing mano area does reduce grinding time. The reduction in grinding time is not a simple linear function of increasing mano size, and the form of the relationship is grain dependent. Models of agricultural intensification which rely on ground stone size are assessed in light of these findings.

Mauz, A. I. (see Cochran, D. R.) [64]

May, E. M. (see MacKinnon, J. J.) [25]

May, J. Alan (Schiele Museum of Natural History)

[7] ARCHAEOLOGICAL SHELL MIDDEN: FIELD EXPERIENCE WITH SITE FORMATION MODELS

Excavation methods of archaeological shell middens are conditioned not only by implications of research hypotheses but also by the models of midden formation available to the archaeologist. New techniques in computer analyses of large bodies of data as well as advances in remote sensing techniques add new, complex dimensions to midden interpretation as well as increase the probability of introduced errors—both in data manipulation and interpretation. I describe midden excavations in freshwater and marine environments as examples of shifts in excavation methods based on insights derived from the use of computers to analyze data, the use of ethnographic accounts, and the use of high technology appliances.

May, J. A. (see Levy, J. E.) [11]

McAllister, Martin (Archaeological Resource Investigations) [Discussant 33]

McAney, Patricia (Boston)

[4] ECONOMIC STRATIFICATION AMONG AGRICULTURAL HOUSEHOLDS IN PREHISTORIC MAYA SOCIETY

The prehistoric Maya structures ringing Pulltrouser Swamp in Northern Belize have been characterized as the residences of the agriculturalists who constructed and farmed raised fields in the adjacent swamp zone. Stone tools and debitage, diagnostic of these agricultural activities, have been documented for the swamp community as a whole. Now data from both test excavations and horizontal exposures are employed to explore the household-by-household variability in the agrarian labor force. The central tenets of the study—that economic stratification within these agricultural communities will be reflected in a positive association between the scale of the residential unit and the frequency of discarded agricultural tools and debitage—is evaluated.

McCafferty, G. G. (see Hoopes, J. W.) [62]

McCartney, Allen P. (Arkansas) and James M. Savelle (McGill)

[43] THULE ESKIMO BOWHEAD WHALE SELECTION: A ZOOARCHAEOLOGICAL ANALYSIS

Zooarchaeological investigations to determine bowhead whale age/size selection by prehistoric Thule Eskimos (ca. 1000-1600 A.D.) were conducted in five different regions in the Canadian High Arctic in 1978 and 1988. Within these regions, which represent both "core" and "peripheral" bowhead whale ranges, measurements were made on approximately 2,000 bone elements representing a

Matheissen, Frances Joan (National Park Service and New Mexico)

[58] WOMEN OF THE CHACO: THEN AND NOW

From 1929-1935 and again from 1971-1978, two major archaeological projects were carried out in Chaco Canyon, New Mexico, both affiliated with the University of New Mexico. The former was a joint project with the School of American Research and the latter with the National Park Service. The similarities and differences in the institutions involved, their research goals and programs, and the role that women played during each period are examined. Specific topics addressed include a comparison of the percentage of women versus men as teachers, supervisors, or students; percentages of degrees at the Ph.D. and M.A. levels obtained by participants in these projects, and future directions taken by these women after they left Chaco.

Martinez, Muriel Alejandro (INAH)

[4] LATE FORMATIVE HOUSEHOLD MIDDEN AT DON MARTIN, CHIAPAS, MEXICO

The archaeological salvage project at the Las Angosturas Hydroelectric Reservoir involved archaeological survey and excavations in the Upper Cucharas River in Central Chihuahua. During the fieldwork, two major Late Formative period refuse pits were excavated at Don Martin. These midden deposits were accumulated in a very short time frame, and include all classes of organic subsistence remains as well as general household items. An understanding of these midden assemblages provides clues to Formative lifeways. I examine the midden constituents in an effort to reconstruct the activities of this Late Formative community in the Cucharas Basin.

Maslowsk, Robert F. (US Army Corps of Engineers-Huntington) and Mark F. Seeman (Kent State)


Major environmental and historical patterns represented in the Mid-Ohio Valley proper are contrasted with those patterns in its main tributaries. The importance of micro-environmental variability such as topography, physiography, basin hydrology, soil variability, and length of growing season are emphasized in reference to general patterns of Woodland occupation. Environmental background is presented for the detailed discussions of Woodland archaeology which follow.

Mason, Carol (Wisconsin-Fox Valley)

[58] FROM THE OTHER SIDE OF THE LOOKING GLASS: WOMEN IN AMERICAN ARCHAEOLOGY IN THE 1950's

In the rush to celebrate advances in the position of women in archaeology, the presence and contributions of foremothers stand in danger of being neglected and forgotten. The contributions of some of these women are considered, especially for the East and Southeast in the 1950's.

Masucci, Maria (Southern Methodist) and Elizabeth J. Reitz (Georgia)

[73] SHELL BEADS AND SHARK TEETH: UTILIZATION OF MARINE RESOURCES DURING THE GUANAGUA PHASE, SOUTHWEST ECUADOR

Survey and excavation 25 kilometers inland in the El Azucar River Valley, southwest Ecuador, indicate a strong marine orientation in subsistence during the Regional Development period (Guangala Phase). These new data suggest that interdependence between coastal and inland dwellers is the key to understanding adaptation to a semi-arid environment. In addition, the investigation of the Guangala Phase in El Azucar shows changes in settlement with increasing site size and number and appearance of a new economic activity with the manufacture of shell ornaments utilizing raw material from the coast. This evidence raises issues concerning responses not only to the natural environment but the socio-economic environment as well.

Mather, David J. (Minnesota Historical Society) and Robert G. Thompson (Iowa)


The Dahkne-Reinke site (32CS29) is a multi-component Woodland occupation with a variety of associated stone tools types. An experimental use-wear study of Knife River Flint serves as a basis for determining the tools' functions. The experimental flakes and artifacts are analyzed and compared using incident light and scanning electron microscopy. Utilization damage and microwear polishes provide insights about the uses of scrapers, points, bifaces, and retouched flakes from the site. Phylloliths adhering to the tool edges add further information regarding plant use. The resulting knowledge adds significantly and in understanding the specific roles of these artifacts in subsistence and daily life at the site.

Mathieu, Frances Joan (National Park Service and New Mexico)

[58] WOMEN OF THE CHACO: THEN AND NOW

From 1929-1935 and again from 1971-1978, two major archaeological projects were carried out in Chaco Canyon, New Mexico, both affiliated with the University of New Mexico. The former was a joint project with the School of American Research and the latter with the National Park Service. The similarities and differences in the institutions involved, their research goals and programs, and the role that women played during each period are examined. Specific topics addressed include a comparison
minimum of over 800 individual whales. The results indicate that although there was an overall selection for yearlings, there was a tendency in peripheral regions to include older, larger whales. The implications of this selection pattern are discussed.

McCartney, Peter H. (Calgary)

[70] THE ANALYSIS OF PREHISTORIC SETTLEMENT SYSTEMS IN THE CANADIAN HIGH ARCTIC

Catchment analysis and related geographic techniques are applied to sites located in Jones Sound, Northwest Territories. Methodological considerations for using such approaches to study arctic hunter-gatherer settlement behavior are discussed. Results are used to form inferences at three levels: 1) reconstruction of individual site economic focus, 2) inter-site variability, and 3) gross temporal changes in settlement and economic strategies.

McCormack, William A. (UC-Berkeley)

[10] THE EMERGENCE OF LONG DISTANCE STONE PROCUREMENT SYSTEMS IN STONE AGE INDIA

Recent research establishes the Son valley in north-central India as the source of stone for late prehistoric hunter-gatherer sites on the Ganges Plain. This discovery doubles previous size estimates of South Asia's largest known hunter-gatherer procurement system to 160 kilometers. The research also establishes the Son as the probable source of materials at Chalcolithic sites near the Nepal border, 250 kilometers north of the Son. A revision of procurement history is presented in which it is shown that long-distance lithic procurement begins in the Upper Paleolithic and subsequently expands until well after the appearance of sedentary food production.

McCorriston, Joy (Yale)

[59] ENVIRONMENT, FARMING, AND MOBILITY IN THE KHABUR DRAINAGE

A focus on the environmental and economic contexts of charred plant remains recovered from Tell Aqab and Ummin Qsair allows examination of prehistoric uses of resources from a range of different ecological niches in the Khabur drainage. Both sites have an Halaf component, but Tell Aqab lies in a dry-farming landscape while only irrigation agriculture is practical at Ummin Qsair. Linking these sites even hypothetically allows us to examine an economic system in an environment punctuated by seasonal resource availability and human mobility.

McCorvle, M. R. (see Wegner, M.) [54]

McCuneon, Patrick (Washington)

[17] TECHNIQUES FOR INVESTIGATING HORIZONTAL AND VERTICAL DIMENSIONS OF ARCHAEOLOGICAL DEPOSITS: AN HISTORICAL REVIEW

Beginning in the early part of the 19th century, the manner in which North American archaeologists have conceptualized archaeological deposits has changed significantly. Early attempts to identify and describe spatial relationships and boundaries of site extent have been challenged by recent research. This research suggests that current conceptualization of archaeological deposits demands a reappraisal of the techniques and units of analysis for spatial investigations in archaeological contexts.

McDougal, Eugene (Museo Arqueologico del Banco Central del Ecuador)

[50] MANGROVES AND SAND DUNES: CHANGING ECONOMIES ALONG THE CHANGING PREHISTORIC SHORELINES OF SOUTHWEST ECUADOR

The southwest coastal region of Ecuador has been continuously occupied for at least 10,000 years. Many early sites were located on elevated ground near dry bays or other low areas that in the past were probably fringed by mangrove swamps. Uplift and barrier dune building may have had a significant role in the disappearance of these swamps. Evidence from early sites indicates that mangrove and savanna environments have been important economic resources which was no longer available to later inhabitants. Most of the later periods sites are located near the contemporary shoreline or in river valleys. Near shore and intertidal resources could be exploited and agriculture, long practiced in prehistoric southwest Ecuador, probably increased in economic importance.

McEwen, Colin (Illinois)


Edith is the only published full version of Betanzos' provides us with detailed descriptions of the rituals carried upon the death of an Inca and the succession of a new king. Priests of children (capac hucha) were sacrificed and interred accompanied by suits of miniature vessels and votive figurines in gold and silver, first in the immediate environs of Cuzco, then throughout the four quarters of the empire. These sacrificial burials were placed at important points in the sacred geography of the empire that the Inca had visited during his reign, serving both to imprint Inca cosmology and mythology on the landscape and to delimit Inca hegemony. I assemble the evidence for such dedicatory offerings to explore the archaeological correlates and implications of the Capac Hucha rite.

McGovern, P. E. (see Swain, C. P.) [39]

McGowan, Kevin P. (Illinois)


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Mecklenburg, Heather (Trent)

[26] COASTAL MAYA TREE-CRAPPING AT WILD CANE CAY, BELIZE

Analysis of abundant plant remains recovered from waterlogged deposits at Wild Cane Cay, southern Belize provides new insights into our knowledge of the Classic and Early Postclassic Maya diet. Recovery techniques, quantification methods, and evaluation of dietary importance of plant remains are discussed. In contrast to inland communities where cultivars such as corn dominate the plant food part of the diet, the Wild Cane Cay Maya relied extensively on tree crops—particularly several palm nut species and edible tree fruits. The significance of the Wild Cane Cay plant data in terms of current knowledge of ancient Maya subsistence is addressed.

McKillop, H. (see Ellis, C. J.) [64]

McManamon, Francis P. (National Park Service)

[7] THE SPATIAL DIVERSITY OF REMAINS IN PREHISTORIC SHELL MIDDENS

Deposits of shell in plowzone and subplowzone archaeological contexts are common among the approximately 75 prehistoric site areas discovered by the Cape Cod National Seashore Archaeological Survey. The densest shell deposits occurred in relatively small portions of site areas. The total area with some shell spread over it was, on the other hand, relatively large. Historic plowing and prehistoric activities are responsible for some of this widespread distribution. Since historic plowing and posthistoric activities are responsible for some of this widespread distribution, in at least some cases the densest shell deposits may have been used by early inhabitants. Results of these analyses are presented and problems of technique and interpretation are discussed.

McManamon, F. P. (see Smith, G.) [63]


[30] AN APPROACH TO THE STUDY OF INCREMENTAL STRUCTURES IN MAMMALS

Techniques for the preparation and examination of incremental structures in mammalian teeth using transmitted light microscopy have been perfected at the Archaeological Survey of Canada by Sterling Presley and at MIT (CMRAE) by Christopher Craig. Through the efforts of Presley and Guy Pollard (MIT), a joint protocol has been developed and applied by the authors and students to teeth from caribou, pig, sheep, goat, cattle, dog, and New World deer in order to document the season of and age at death. Results of these analyses are presented and problems of technique and interpretation are discussed.

Medaglia, Christian (Harvard), Elizabeth A. Little (Nantucket Historical Association) and Margaret J. Schoeninger (Harvard)

[67] LATE WOODLAND LASER DATING ON NANTUCKET ISLAND (MASSACHUSETTS): A STUDY USING STABLE ISOTOPE RATIOS

A question concerning the diet of the Late Woodland period inhabitants on Nantucket involves the presence or absence of maize in their diet. Results from three human skeletons (d13C = -10.6 o/oo) suggest the inclusion of C4 plants or marine foods. A study of potential food items from various environments on the island (fresh water ponds, salt marsh, estuaries, open ocean, heat, dunes and upland) revealed no indigenous C4 plants and only one CAM plant (prickly pear). The average terrestrial plant value (excluding prickly pear) was 21.2 ± 2.0 o/oo, while marine values average -16.9 ± 0.0 o/oo. Possible
explanations for the humans' high carbon signature include: a 100 percent marine diet (unlikely), unique fractionation in humans, or dependence on CAM or C4 plants.

Mees, Geoffrey C. (Maidhead), S. Ford (Reading), M. Bowden (BCHME) and V. Gaffney [/16] THE DATE OF ‘CELTIC’ FIELD SYSTEMS ON THE BERKSHIRE DOWNS, ENGLAND
Field systems on chalk downland were dated by excavated surviving lynches. The positions of potsherd derived from manuring were recorded in trenches cut where possible across major axes of the systems. Environmental evidence was obtained from mullein analysis in some cases. Seventy-five percent of the pots recovered were Roman, six percent prehistoric, and 20 percent were undatable. Sherds in stratigraphically primary levels suggest a Roman terminus post quem for nine of thirteen lynches trenches. Stratigraphic, environmental data, and the morphology of surviving boundaries, indicated a single phase of cultivation in all but one case.

Mehr, Mark and James M. Collins (Office of the State Archaeologist-Iowa)
[36] HOUSEHOLD ARCHAEOLOGY AT CAHOKIA AND ITS HINTERLANDS
An original synthesis of new information about late prehistoric Cahokia and the surrounding American Bottom region is illustrated by changes in the organization of domestic life at Cahokia and several smaller sites. The rise and fall of a complex society is traced by the evolution of household in the regional settlement system. Trends of the spatial organization and composition of domestic facilities “downtown” in the countryside are characterized by parallel but different trajectories. Data have been derived from work sponsored by the Illinois Historic Preservation Agency at the Cahokia Interpretive Center Tract II and the Illinois Department of Transportation FAL-270 Archaeological Mitigation Project.

Mees, Marvin C. (U.S. Forest Service-Atlanta) and Kent A. Schneider (USFS-Atlanta)
[27] FIFTEEN YEARS OF CRM IN THE SOUTHERN REGION: AN OVERVIEW
In the mid-1970's, a report was written advising a forest that cultural resources rules and regulations were intended for the National Park Service. The uphill battle that ensued insured that CRM was to become an ever-present dominant force in overall forest management in the southern region. The present paper discusses the growth of CRM in the Southern Region over the past 15 years—the change from none to more than 20 archaeologists, from zero to more than $1,250,000 in an annual budget, and what has been done for the money.

Meignen, L. (see Bar-Yosef, O.)[24]

Mellows, Paul A. (Cambridge)
[2] INDUSTRIAL VARIABILITY IN THE SOUTHWEST FRENCH MOUSTERIAN: NEW PERSPECTIVES ON AN OLD DEBATE
Any attempt to explain variability in Middle Paleolithic industries must take account not only of the technological and morphological features of the industries, but also of their patterning through time. In western France there is evidence for a strong element of chronological patterning in the occurrence of several of the most distinctive industrial variants of the Mousterian, and evidence for clear associations with parallel shifts in climatic and ecological conditions. The combination of this evidence can be used to suggest some specific mechanisms for the changing character of Mousterian industries at different stages throughout the Mousterian succession.

Meltzer, David (Southern Methodist)
[32] ALTITHERMAL ARCHAEOLOGY ON THE SOUTHERN HIGH PLAINS
The discovery of an Altithermal-age wellfield at Mustang Springs (west Texas) provides striking evidence of early to middle Holocene climates and hydrology, and the human adaptive response to long-term drought on the southern High Plains. It implies a far more extensive human presence during this episode than previously suspected. But such evidence raises questions about human adaptive strategies that can be answered only partly by the record at Mustang Springs. The Mustang Springs wellfield, however, is surely not unique, and its location, deeply buried in a geological low within Mustang Draw, help explain why sites of this age are so scarce, and what might be done to detect them.

Merrill, W. (see Hard, R. J.)[18]

Metcalfe, Duncan (Utah)
[41] A GENERAL COST/BENEFT MODEL OF THE TRADEOFF BETWEEN TRANSPORT AND FIELD PROCESSING
Field processing of resources prior to transporting them back to residential bases is a common activity among collectors. Effort expended in field processing typically reduces the effort required to transport a usable unit of the resource. Under many circumstances, effort spent in field processing versus transport can be conceptualized as a trade-off which has an optimal solution. A simple optimality model is presented which predicts the solution to this tradeoff, and which demonstrates how this will vary by resource and transport distance. The utility of the model is examined for animal and lithic procurement.

Metzger, M. C. (see Falconer, S. E.)[46]

Michaelsen, C. H. (see Vrohies, B.)[7]

Michaelsen, J. (see Larson, D. O.)[37]

Micholov, M. (see Schneider, E.)[32]

Michaelsen, C. (see Pohl, M.)[26]

Miller, James J. (Florida Bureau of Archaeological Research)
[63] CRM 2000
Cultural resource management, as it is now practiced in the United States, has mainly developed in the short period since the passage of the National Historic Preservation Act twelve years ago. This paper addresses some of the accomplishments and shortcomings of the field, as it now exists, and attempts to determine its directions through the 1990's. From the perspective of a rapidly developing Southeastern State, the effects of federal, state, and local programs will be assessed with a view toward offering recommendations for improvements in managing and interpreting archaeological resources.

Miller, Julia (Pennsylvania), Edward M. Schortman and Patricia A. Urban (Kenyad)
[56] MIDDLE PRECLASSIC REMAINS AT THE SITE OF SANTO DOMINGO, NACO VALLEY, HONDURAS
Santo Domingo's 1979 excavations indicated that a raised area about 40 meters in diameter resulted from midden accumulation. The deposit was dated to the Middle Preclassic on typological grounds, no C14 samples or structures were recovered. Reexamination in 1988 confirms the area's midden origin and date. A modern pipeline was found sealed below a collapsed bajada structure, and itself covering more midden deposits. This platform is one of the oldest structures found to date in Honduras and suggests that early Naco Valley occupation was substantial and may have been socially differentiated.

Miller, Mark E. (Office of the State Archaeologist-Wyoming), George C. Frison and Kyle C. Baber (Wyoming)
[40] CONTINUING INVESTIGATIONS AT THE FINLEY PALEOINDIAN SITE IN SWEETWATER COUNTY, WYOMING
The Finley site is a Cody Complex bison kill/Butchery locality initially investigated by the University Museum of Philadelphia and Nebraska State Museum prior to World War II. In the early 1970's, and again in 1987, the University of Wyoming and the Office of the Wyoming State Archaeologist located additional Cody Complex artifacts in a vandalized bonebed about 200 meters north of the Wyoming excavations. This paper discusses the relationship between the two localities and compares the lithic and faunal assemblages. Directions for future research at the Finley site are also considered.

Minnis, Paul (Oklahoma)
[12] CHANGES IN PREHISTORIC-HISTORIC FOOD PATTERNS IN THE SOUTHWEST
Ethnographic food patterns for the Southwest differ somewhat from the southwestern paleoethnobotanical record. One major change seems to be in the least preferred foods, famine foods. Major modern famine foods appear to have been dietary items for prehistoric peoples of the region. These include seeds of small annuals, such as grasses, mustards, and whole, reproductive structures of perennials, and various leguminous resources. It is argued that the prehistoric-historic shift in resource preference has followed a regular and predictable pattern.

Misner, Elizabeth J. (Georgia)
[69] A REGIONAL ANALYSIS OF LITHIC SITE DISTRIBUTION IN THE VALLEY OF OAXACA
Data from a regional survey of the Valley of Oaxaca Mexico is analyzed for indications of craft specialization of locally available lithic materials. The amount and types of lithic artifacts are compared by rank and size of the sites. Production and distribution of ceramics and the association of imported obsidian are compared to the presence and function of local lithic artifacts. Two systems of lithic use and production are present. Distribution patterns and large lithic production areas are shown to reflect
Mistovich, Tim S.

[36] TOWARD AN EXPLANATION OF VARIATION IN MOUNDVILLE PHASE HOUSEHOLDS IN THE BLACK WARRIOR VALLEY, ALABAMA

The distinct demography of domestic sites, as opposed to civic-ceremonial sites, of the Mississippi period Moundville phase in Alabama has emerged from recent analyses of settlement patterns. A small set of excavated households from both site classes has provided evidence for equally distinct variations in organization and the composition of artifact assemblages. These data provide a springboard for the exploration of variation in Moundville phase households. We can now begin to consider the implications of household function within this two-tiered settlement system with regard to changing social, political, and economic structures during the transition from Late Woodland village life to the dispersed agricultural system of the Mississippi period.

Mitchem, Jeffrey M. (Florida Museum of Natural History)

[1] INITIAL SPANISH/INDIAN CONTACT IN WEST PENINSULAR FLORIDA: THE ARCHAEOLOGICAL EVIDENCE

The western part of peninsular Florida was the starting point for Spanish exploratory expeditions in 1518 and 1539. This region was the first place within the present continental United States where Spanish and Native Americans met. Recent archaeological research focused on this era in Florida has been carried out in two ways: 1) study of private and museum collections from previously excavated sites, and 2) problem-oriented excavations. This research has led to the identification of several sites with evidence of initial Spanish/Native American interaction and its consequences. These include the Wekiwa Site, Ruth Smith, and Tatham Mounds.

Moseley, Michael (Florida), David Wagner (Space Remote Sensing Center) and James B. Richardson, III (Carnegie Museum of Natural History)

[50] SPACE SHUTTLE IMAGERY OF SHORELINE ALTERATION PROCESSES ON THE PERUVIAN COAST

Large format Camera Space Shuttle imagery taken in 1984 combined with earlier aerial photography spanning more than three decades supports the hypothesis that recent beach ridges are signatures of episodic "Radical Environmental Alteration Cycles" entailing El Nino flooding of teotihuanco disturbed landscapes. This suggests that earlier beach ridges identify episodes of extreme stress on human settlement and subsistence systems.

Moseley, Michael (Florida) [Discussant 6]

Mountjoy, Joseph (North Carolina-Greensboro)

[7] MACRO AND MICRO SCREEN SAMPLING OF A MIDDLE FORMATIVE SHELL MIDDEN AT SAN BLAS, NAYARIT (MEXICO)

Excavations conducted 15 years apart (1968 and 1983) at the same site but using different extensive and intensive sampling strategies have resulted in different data recovery and consequent interpretations regarding the cultural/ ecological adaptation by the past inhabitants. Most significant for reinterpretation have been the data resulting from micro-screening and flotation. These methods, which were employed in the 1983 project but not in the 1968 one, resulted in significantly different recovery of bone, shell, charcoal, coprolites and cultural remains, and have led to new conclusions about the cultural system of the Middle Formative inhabitants.

Mueller, Marilyn (Colorado)

[75] DIGITAL IMAGE PROCESSING OF REMOTE SENSING DATA FOR SETTLEMENT PATTERN STUDIES IN NORTHWESTERN COSTA RICA

Throughout the tropics, settlement pattern studies have long been problematic due to dense vegetative cover, which often renders traditional field survey methods and sampling designs infeasible. Digital image processing of Landsat Thematic Mapper data from northeastern Costa Rica, integrated with digitized ecological data, has been applied to various aspects of this problem: 1) assessing the degree of site visibility, 2) mapping vegetation types to determine appropriate field survey methods, and 3) delineating environmental characteristics for stratified random sampling and analysis of settlement locations. Specific techniques, including band ratioing, principal components analysis, decorrelation stretches, and classification are evaluated and results of field verification presented.

Mueller, R. G. (see Joyce, A.J.)[59]

Mulolland, Mitchell T.

[54] ACCULTURATION AND CONTINUITY AMONG EIGHTEENTH CENTURY NATIVE AMERICANS IN SOUTHERN NEW ENGLAND

Sites containing evidence of probatohistoric Native American culture are seldom encountered in northeastern North America. The Simons site, in Mashpee, Massachusetts, was occupied by a family of Native American mariners during the eighteenth and nineteenth centuries. Probatohistoric ceramics from the site, similar to low-fired colonial redware, occur with lithic artifacts, shell, faunal remains, and eighteenth century stonewares, delicators and clay pipes. These materials and their associations provide evidence of both acculturation and the continuity of Native American traditions into the historic period as the family adapted to Euro-American lifeways.

Moralis, Kathleen (UC-Berkeley)

[10] URBAN AGRICULTURAL PRODUCTION IN SOUTH INDIA

The region straddling the southeastern Indian city of Vijayanagara supported a vast and diverse agricultural system, whose development reflected the rapid growth and abandonment of diversifed agricultural production. Preliminary results from a regional survey of the Vijayanagara hinterland reveal this population center. Preliminary results from a regional survey of the Vijayanagara hinterland reveal this population center. Preliminary results from a regional survey of the Vijayanagara hinterland reveal this population center.
Mulholland, Susan

[49] GRASS OPAL: PHYLLITH PRODUCTION: A BASIS FOR ARCHAEOLOGICAL INTERPRETATION IN THE NORTHERN PLAINS

Paleoethnobotanical and paleocological analyses of grass phylliths from sediments at archaeological sites have relied heavily on published correlations of phyllith shapes and grass taxa. A recent study of native grasses from central North Dakota indicates that while these correlations are generally accurate, significant deviations do occur. Inflorescence material particularly displays different patterns. Modified correlations of grass taxa and phyllith shapes are proposed that reflect phyllith production more accurately. Further refinements are expected as additional grasses are examined. Identification of phylliths from archaeological sites should be as detailed and accurate as possible to provide sound data for cultural interpretations.

Muller, Jon (Southern Illinois-Carbondale)

[71] CHAOS IN ARCHAEOLOGY: PROMISES AND CAUTIONS

The newly developing discipline of “Chaos”—disciplined chaos within dynamic systems—has much to offer archaeological research, description, and explanation. Chaos theory offers fruitful and useful models for many phenomena sometimes dismissed as “noise” such as oscillations in organizational states, the relation of organizational complexity to “collapse” of cultural systems, and the role of unpredictability in adaptation. At the same time, useful application of chaotic theory to anthropology and archaeology will require mathematical sophistication in order to avoid this approach becoming merely a source of metaphorical inspiration as has happened with some previous archaeological “fads.”

Musson, Patrick J. (Indiana) [Discussed by 5]

Marvich, Robert E. (Harvard)


In the three decades that scientific archaeology has been actively practiced in southwest China, a number of major bronze traditions have been identified. The cultural expression of bronze metallurgy throughout this region involved both innovative internal change and diverse external influences. The picture now emerging shows southwest China to have been a major crossroads enjoying extensive contacts with cultures from the Asian steppes, northwest China, and mainland Southeast Asia. A combined study of bronze metallurgy and mineral resources suggests that uneven ore distribution played a major role in shaping these cultural relationships.

Murray, Matthew L. (Harvard)

[34] IRON AGE TRANSFORMATIONS: SETTLEMENT PATTERN ANALYSIS AND THE CHANGING SOCIO-CULTURAL ORGANIZATION OF SPACE IN SOUTHERN GERMANY

In connection with the investigation of the late Iron Age center of Kelheim, West Germany, research has been undertaken on the development of settlement from the late Bronze Age to the late Iron Age in southern Germany. The locational patterning of these settlements, and their relationships to other sites, such as cemeteries and ritual enclosures, is analyzed. The research is cross-temporal to take into account the cumulative spatial symbolism and historical meanings of locations. Through this perspective in landscape analysis the attempt is made to elucidate the socio-cultural organization of space in Iron Age Germany, and the processes of change in society and its spatial expression.

Murray, M. L. (see Robinson, R. A.) [67]

Myers, James T. (Vanderbilt)

[35] NEW EVIDENCE ON THE EVOLUTION OF REGIONAL ECONOMY ON THE SOUTH COAST OF GUATEMALA

Fundamental to the study of complex societies in Mesoamerica is an understanding of early economies and village specialization and their role in the evolution of local and regional exchange networks. On the Pacific Coast of Guatemala, evidence from the Early Preclassic site of El Mesqu offers new insights into the development of local exchange systems. Initial ceramic analysis suggests that from the site's earliest occupation, salt production played an important role in the evolution of economic complexity. This interpretation is discussed in the light of other recent evidence on Early Formative exchange systems and social complexity.

Myler, E. (see Zeder, M.) [59]

Neusius, Sarah W.

[Nash, David T. (New Mexico)]

[17] SPATIAL PATTERNING AND SITE FORMATION PROCESSES AT HAYSTACK CAVE

Haystack Cave is an archaeological-paleontological site containing late Pleistocene-Holocene deposits, located in southwestern Colorado. These deposits are quite variable and are characterized by a high degree of bioturbation, the chemical and mechanical weathering of the surrounding bedrock, and the presence of large concentrations of faunal remains, putative artifacts, and numerous pebble sand cobbles. Use of multiple procedures is emphasized to 1) evaluate the validity of a pre-12,000 year old occupation at the site and 2) define the chemostratigraphic effects of a variety of geological and biological decomposition processes active in the formation of the site's deposits.

Nuss, Jr., J. (see Yerkes, R. W.) [36]

Neff, Hector (Smithsonian)

[56] EPISODIC CERAMIC DEVELOPMENT IN PACIFIC COASTAL GUATEMALA

Discontinuities are evident in the Pacific coastal Guatemalan ceramic sequence at several points in time, especially around A.D. 250. Gradual development of Late and Terminal Formative period ceramic traditions was truncated around that date, and vigorous new traditions emerged subsequently. Two types of evidence support this interpretation: 1) stylistic contrasts, and 2) evidence from neutron activation analysis that suggests discontinuities in resource use. It is argued that ceramic traditions in coastal Guatemala passed through a historical bottleneck or filter around A.D. 250. Possible disruptive events for this particular case are mentioned along with a general argument that ceramic evolution is normally episodic rather than gradual.

Nelson, Margaret (SUNY-Buffalo)

[61] PREHISTORIC STRATEGIES OF LAND USE IN SOUTHERN NEW MEXICO: A TECHNOLOGICAL APPROACH

The addition of agriculture to a hunting-gathering economy may result in a variety of land use strategies in an arid to semi-arid environment where intensive dependence on agriculture is problematic. This paper reports on a regional analysis of land use patterns of prehistoric agriculturists in southern New Mexico. Particular attention is paid to the extent and organization of mobile aspects of land use. Data on stone tool design and tool reduction practices are used to assess these strategies.

Netherly, Patricia J. (Banco Central del Ecuador, Museo Antropológico)

[73] FEASTS AND FANDY WAKES: JAMBELI CEREMONIAL MIDDENS FROM THE POZA SANTA MARIA SITE, ARENAS VALLEY, ECUADOR

Four assemblages of ranked areas of ceremonial midden have been located and excavated at the Jambeli Period Poza Santa Maria Site in the Lower Arenas Valley. Jambeli sites, first reported on the mangrove littoral as specialized marine stations, have now been found well inland in agricultural contexts. The favorable conditions of preservation in the midden offer new information about Jambeli subsistence. The spectacular pottery recovered indicates a ceremonial function and new information on the socio-political organization of this society.

Neuman, Loretta (Society for American Archaeology) [Discussed by 23]

Neusius, Phillip (Indiana University of Pennsylvania) and Lynne P. Sullivan (New York State Museum)

[68] IN SEARCH OF THE ERIE

Little is known about the Erie Indians who were eliminated by the Seneca Iroquois during the mid-17th century. The New York State Museum has initiated a research program in southwestern New York aimed at defining this group's place in culture history. Excavations in the early part of this century were limited to the burial pits and associated ceramics. Recent excavations at the Ripley site provide the first evidence of settlement patterns and subsistence practices for this group. Results of the first season's investigations reveal the presence of longhouse structures and suggest ties with Iroquois groups to the north.

Neusius, Sarah W. (Indiana University of Pennsylvania)

[58] PROTOHISTORIC HUNTING STRATEGIES IN SOUTHWESTERN NEW YORK STATE: THE EVIDENCE FROM THE RIPELY SITE

Although there is little question that the subsistence base of Late Prehistoric, Protohistoric and Historic Iroquoian groups in the Northeast was essentially horticultural, the interrelationship of animal exploitation and food production seldom has been investigated. Recent analysis of faunal remains from the Ripley Site, a Protohistoric village on the Lake Erie bluffline in extreme southwestern New York, has provided an opportunity to evaluate this interrelationship. Information on the relative usage of
Nicholas, Ilene M. and Elizabeth Henrickson

aquatic and terrestrial habitats and on the reliance on hunting strategies such as garden hunting now is available.

Nicholas, Ilene M. (Hobart and William Smith) and Elizabeth Henrickson (Royal Ontario Museum) [46] FUNCTIONAL ANALYSIS OF AL-QESIR, AN EARLY BRONZE AGE TRANSJORDANIAN SITE

Preliminary mapping and soundings of the fortified but apparently largely non-residential later Early Bronze Age site of Al-Qesir, in the fertile Baq'ah valley, just north of Amman, Jordan, suggests that the broad concept of "urban" and "rural" is not helpful in interpreting the site's function and settlement context. Comparisons with other Early Bronze data from Palestine suggest that this 3.5 hectare site offers a unique constellation of features including 43 enigmatic tumuli, at least three cisterns, and several rectangular buildings which may be more profitably investigated at a lower level of interpretation, involving activity analysis and reconstruction of organizational foci.

Nicholas, L. (see Feinman, G.) [29]

Nicholson, Paul and Helen Patterson (Sheffield) [29] THE BALLAS POTTERY PROJECT: ETHNOARCHAEOLOGY IN UPPER EGYPT

The production of amphora-like vessels at the village of Deir el-Charbi near Ballas in Upper Egypt is examined, using the work of the Ballas Pottery Project. This center produces a single type of vessel using traditional technology and a clay source that has been exploited since pre-pharaonic times, which must place it among the oldest potting sites in Egypt. The archaeological correlates of pottery production are studied at the village and related to actual excavated potting installations. The stages of production and distribution of these vessels and their significance to archaeologists are also discussed.

Nieves, A. (see Arnold, D. E.) [29]

Niquette, Charles M. (Cultural Resources Analysts) [5] EARLY/MIDDLE WOODLAND SETTLEMENT PATTERNS IN THE OHIO VALLEY

Although the available data are skewed heavily towards mounds and mortuary sites, non-mortuary Early/Middle Woodland settlement patterns (400 B.C. to A.D. 400) are examined throughout the Mid-Ohio Valley. New data obtained from excavations of two non-mortuary Woodland sites in eastern Kentucky (the Graham and Calloway sites) and extensive survey data from the Big Sandy and Kanawha River drainages is summarized. A regional model is offered to explain Early/Middle Woodland settlement patterns and to aid in the identification of Early/Middle Woodland habitation loci.

Nisbet, R. (see Biagi, P.) [72]

Novick, Andrea (North Carolina Department of Transporation) [70] LITHIC INFERENCE AND PATTERED REDUNDANCY AT GATECLIFF SHELTER, NEVADA

Flaked stone tools and debitage from the excavation of Gatecliff Shelter, Nevada, are used to examine site structure and hunter-gatherer mobility/organizational strategies. The analysis of site function indicates that little post-depositional movement occurs within the deposits. Small artifacts are discarded adjacent to hearths while large artifacts are generally farther from such areas. As a result of site function (patterned redundancy) lithic technology does not change through time. The diachronic homogeneity of the lithic assemblage reflects the constant structure of the site within a temporal variety of mobility strategies.

O'Brien, P. M. (see Rogge, A. E.) [45]

O'Connell, B. H. (see Whelan, M.) [32]

O'Connell, James (Utah) [41] FACTORS CONDITIONING THE DIFFERENTIAL TRANSPORT OF ANIMAL BODY PARTS AMONG EASTERN HADZA

The last few years has witnessed an increasing number of investigations directed at understanding the factors which condition the differential transport of animal body parts from kill/butchering sites to residential bases. These studies have demonstrated that the range of variables in the types and frequency of elements transported is dramatically greater than envisioned only a decade ago. The potential causes of this variation are examined in light of data collected in 1988 on Hadza hunting, field processing, and transport of large body parts. The archaeological implications of the results are discussed.

Oteo, Marcel

Ondo, Patricia (Colorado) [75] SCANNING ELECTRON MICROSCOPE ANALYSIS OF HUMAN SKELETAL MATERIAL FROM COSTA RICA

Human skeletal remains continue to develop importance as a source of direct biological evidence for data on nutrition, health status, and pathologies of prehistoric populations. Reflecting the interest to gain new further data from human skeletal material, a series of analytical techniques have been developed using the SEM and related analytical tools. The analyses which to date have been carried out at the Medical School of the University of Costa Rica represent a breakthrough in physical anthropology in Costa Rica. Results from analyses at three geographically and temporally different sites are presented.

Oliver, B. (see Woolsey, A. J.) [14]

Olive, M. (see VanVander, P.) [66]

Oslen, Sandra (John Hopkins) [46] A THEORETICAL APPROACH TO UPPER PALEOLITHIC HORSE HUNTING STRATEGIES AT SOLUTRE, FRANCE

Recently, researchers have begun to expand Paleolithic archaeology beyond the realm of artifact classification and temporal sequences to the reconstruction of past lifeways. Hunting unquestionably played a crucial role in the daily lives and economy of Paleolithic people. The unique topographic setting of the site of Solutre, in addition to the vast deposits of horse skeletons there, provides an opportunity to reconstruct hunting strategies employed from the Late Mousterian to the Final Magdalenian. Dental cementum analysis yields important information about the seasonality of the hunts and scanning electron microscopy offers interpretation of butchery and taphonomic alteration.

Olson, Stanley (Arizona State Museum) [54] TENTH CENTURY LAMELLAR ARMOR FROM TIBET

On two trips to China in 1986 and 1987, as a guest of the Chinese Academy of Science, the author had an opportunity to visit a number of Buddhist Monasteries in Tibet in relation to a study on the early domestication of the yak on the Tibet-Qinghai Plateau. At that time it was also possible to compare examples of early lamellar body armor that is present in the monastery collections. This is of considerable importance because it adds to our knowledge of Persian influence in the design of armor and trade routes into that area of Tibet.

Olczewski, Deborah L. (Arizona) [81] HOMING THE AHAMARIAN TRADITION: AN UPPER PALEOLITHIC SITE FROM THE WADI HASA, WEST-CENTRAL JORDAN

Wadi Hasa Site 784x represents a series of late Upper Paleolithic occupations at a small rockshelter in west-central Jordan. Cultural remains recovered from test units include chipped stone, hearths, and remarkably well-preserved faunal elements. Typological and technological analyses of the chipped stone suggest that this site is par of the Ahmarian Levantine Upper Paleolithic. As the delineation and acceptance of the Ahmarian is a relatively recent phenomenon, the data from 784x are used to examine the role of this site as a limited activity location within the Ahmarian tradition, and its relationship to the Ahmarian of the Negev and Sinai.

Olczewski, D. L. (see Barton, C. M.) [13]

Ortner, Donald J. (Smithsonian) [Discussant] 57

Otto, Marcel (Liege) [24] THE SIGNIFICANCE OF INDUSTRIAL VARIABILITY IN THE EUROPEAN MIDDLE PALEOLITHIC

The essential stability of technical processes throughout the Middle Paleolithic periods reflects the remarkable flexibility of these techniques in coping with a variety of different environmental, economic and social constraints. Explanation of Middle Paleolithic industrial variants must therefore take account of these adaptive aspects, as well as distinct regional traditions in technology. Explanations in terms of activity differences, raw materials, environmental adaptations, technological evolution, "traditions" etc. are therefore not mutually exclusive, but rather complementary. Despite variability in these features, the relative stability (or even monotonous) or Mousterian variants throughout large areas of Europe seems to reflect a basic unity in the "ethnic" basis of Mousterian populations.
Paine, Richard (Pennsylvania State)

[79] ESTIMATING PREHISTORIC MIGRATION FROM SKELETAL AGE DISTRIBUTIONS: A CASE EXAMPLE FROM COPAN, HONDURAS

Migration has been demonstrated to affect, quantitatively, the age distribution of populations. A procedure is discussed that models the effect of varying degrees of migration on the age-at-death distribution of a population, given specified fertility and mortality rates. The procedure is used to estimate migration patterns for archaeological populations from skeletal samples. Settlement evidence and demographic reconstruction indicate that the ancient Maya site of Copan was a likely recipient of migrants during its rapid growth from 500-800 A.D.; however, this notion has been difficult to document firmly. The procedure is applied to this site in an attempt to better understand development of a major Maya center.

Faquin, Charles P. and Thomas R. Baker (Maine-Farmington)

[77] THE CASCADE FALLS SITE: AN EARLY LATE WOODLAND HABITATION SITE LOCATED IN GORHAM, NEW HAMPSHIRE

Investigations conducted in Gorham, New Hampshire, resulted in the identification of three previously unknown archaeological sites. Of special note, the Cascade Falls site contains a lithic and ceramic assemblage attributable to the Early Late Woodland period. In particular, the lithic assemblage recovered there consists primarily of tools and debitage of Mt. Jasper rhyolite obtained from the nearby Mt. Jasper quarry. The relationship of the Cascade Falls site to the Mt. Jasper quarry site is explored and some insights are offered on the lithic reduction technologies of the early Late Woodland inhabitants of the upper Androscoggin River Valley.

Parnas, Jeffrey R. (Michigan) [Discussant 10]

Patterson, H. (see Nicholson, P.) [29]

Patterson, Thomas (Temple) [Discussant 18]

Paulsen, Allison C. (Institute of Andean Studies-UC-Berkeley)

[73] PREHISTORIC ENVIRONMENTAL CHANGE IN SOUTHWEST COASTAL ECUADOR AND ITS EFFECTS ON LOCAL SETTLEMENT PATTERNS

The prehistoric ceramic sequence for the Santa Elena Peninsula, on the southwest tip of coastal Ecuador, consists of five successive and distinctive pottery styles which are, in order, Valdivia, Machalilla, Engoroy, Guangala, and Libertad. Archaeological evidence suggests that this peninsula area was virtually unoccupied during these intervals, between Valdivia and Machalilla, between Guangala and Libertad, and from the end of Libertad until the Spanish arrival in 1532 A.D. This pattern of successive occupation and abandonment, which is not characteristic of the rest of the Ecuadorian coast, suggests that the peninsula was uninhabited whenever deterioration of the local environment did not permit human settlement.

Pease, Deborah M. (Missouri)

[73] INVESTIGATING PREHISTORIC SUBSISTENCE CHANGE AND AGRICULTURAL INTENSIFICATION IN THE JAMA RIVER VALLEY, MANABI, ECUADOR

This paper discusses ongoing paleoecological and agronomic research documenting the nature of change in agricultural systems in prehistoric chiefdom-level societies in the Jama Valley. Results of two seasons of study of traditional corn and manioc cropping and growth conditions are presented. Archaeological data relevant to understanding prehistoric agriculture, including macroremains, phytoliths, and pollen data from the Jama and San Isidro sites, are summarized. Changes in subsistence over time and, between the upper (San Isidro) and lower (Jama) valley, are discussed in terms of the model of agricultural productivity.

Pease, D. M. (see Piperno, D.) [49]

Pendery, Steven R. (Boston City Archaeology Program)

[80] TRADE AND CONSUMPTION OF THE MASSACHUSETTS BAY PURITANS

The Massachusetts Bay Puritans are better known for their literary heritage than for their material culture. Yet, the Puritans propelled their colony into the mainstream of trade between Europe, Africa and the New World. This paper examines the earliest archaeological and documentary evidence for amenities in Massachusetts Bay households and argues for an active role of consumer goods in transforming social relations in both seaports and interior communities.
of prehistoric wetland cultivation based on present day ethnographic accounts of farmers in Central and South America.

**Polglass, Christopher (SUNY-Binghamton)**

[34] **COMPETING SOURCES, RESOURCE AVAILABILITY AND UTILIZATION AT THE END OF LONG-DISTANCE OBISIAN EXCHANGE ROUTES**

Long-distance exchange of obsidian is a major aspect of economic relations during the neolithic in Italy. Comparisons of archaeologically recovered samples to geological source samples demonstrate the local availability and utilization of competing source materials. Two sites in northern Italy, Gaione (Parma) and Forma, use Capuccini (Fienza), are given as examples of intra-site variation in obsidian accessibility from different sources. Due to differential morphological characteristics upon arrival, different technological approaches are applied to the obsidian from the competing sources. These results suggest the problems faced by consumers of imported materials near the end of long-distance exchange networks.

**Pollock, Susan (SUNY-Binghamton)**

[18] **WOMEN IN A MEN'S WORLD: IMAGES OF SUMERIAN WOMEN**

Imagery and representation are important parts of any examination of power and prestige; our questions must address not only what people do, but also how their actions are socially recognized and valued. My paper examines gender relations in the early Sumerian civilization of Mesopotamia (mid-third millennium B.C.) through representations in different media. These media include text, iconography, and burials. I consider the articulation of images with "actual" gender roles and relations, and evidence for dynamic aspects of gender relations.

**Pool, Christopher A. (Tulane) and Robert S. Santley (New Mexico)**

[29] **MODELS OF MIDDLE CLASSIC POTTERY PRODUCTION AND DISTRIBUTION IN THE TUXTLA MOUNTAINS, SOUTHERN VERACRUZ, MEXICO**

Economic systems of varying scale and character procure raw materials and distribute finished products in predictable ways, given a particular distribution of resources and level of demand. Evidence from geological field mapping, X-ray fluorescence spectrometry and archaeological survey and excavation are employed to develop alternative models of Middle Classic (A.D. 300-700) ceramic production and distribution in the southwestern Tuxtlas Mountains of southern Veracruz. The models are evaluated in light of compositional data for pottery from other sites in the region and the geographical pattern of exploited clay source formations.

**Pope, Geoffrey G. (Illinois)**


A number of recent articles have suggested that the "amorphous" nature of Pleistocene paleolithic assemblages ('chopper-chopping tools') in the Far East may result from the gradual development between the capabilities of Pleistocene Homo and the absence of suitable raw materials or the elimination of this period from the world. Still other workers have suggested that true Achelulean assemblages (with a high percentage of hand-axes) do exist in the Far East and the relative presence of these assemblages can be discerned in the archaeological record. All of these interpretations suffer from serious shortcomings which cannot explain the totality of the evidence. An alternative interpretation is presented based on recent discoveries in China and Southeast Asia which indicate that the distinct nature of Far Eastern assemblages is a direct result of the exploitation of forest habitats accomplished through a reliance on a largely non-lithic technology that emphasized the production and utilization of highly standardized lithic tools. This interpretation is fully consistent with new paleoenvironmental, palaeoenvironmental, and geochronometric data suggesting that such an adaptive strategy persisted for over one million years throughout the Far East.

**Pope, K. O. (see Dublin, B. H.)**

[70] **Poot, Alice (Tejas Tech)**

[71] **NEW AGE ARCHAEOLOGY**

It is argued that "post-processual" archaeology (PPA) is part of contemporary society's "New Age" (NA) phenomenon. Both PPA and NA are in part responses to rapid change, information explosions, new technologies (sometimes poorly or misapplied), and failures of established philosophies and institutions to meet modern needs. PPA and NA participants seek to establish contact with the past in sometimes unorthodox ways, emphasize mental aspects of behavior, create plural "truths" and "realities," and attempt to unmask ideologies and their effects. The underlying assumptions and major manifestations of PPA and NA are examined and put into the context of contemporary society.
Posselt, Gregory L. (University Museum-Pennsylvania)

[18] REGIONALISM AND THE HARAPPAN CIVILIZATION

Recent research in the Harappan Civilization of India and Pakistan (2,600-2,000 B.C.) has revealed a complex cultural mosaic during the three major phases of this cultural tradition: Pre-urban, Urban, and Post-urban. The various regional manifestations of the Harappans seem to be dependent on ecological/adaptive features as well as cultural/stylistic elements. The monolithic construct stemming from the Wheeler/Piggot era is most certainly no longer a model suitable for productive scholarship.

Potter, D. (see King, E.) [46]

Powell, Mary Lucas (Kentucky)

[57] PALEOPATHOLOGY IN SOCIAL CONTEXT: HEALTH AND RANKED STATUS AT MOUNDSVILLE

Modern paleopathological analyses must employ an explicitly integrative approach to evaluate accurately and interpret coherently the diverse array of factors influencing biological and social dimensions of health. Two decades of chronological, mortuary, settlement, and subsistence studies focused on the prehistoric Alabama chiefdom centered at Moundsville. These data provided the background for a recent assessment of health in its social context. Bone and tooth data have yielded ranked associated dietary differences. Epidemiological analysis of skeletal data, however, revealed no clear pattern of differential health. These results, in turn, contribute to ongoing bone chemistry/isotopic and mortuary research.

Powell, Shirley (Northern Arizona)

[12] ARCHAEOLOGICAL SURVEY DATA: HOW CONSISTENT ARE WE IN RECORDING THEM?

Do archaeologists see the same things on survey, and how consistently do they record what they observe? Answers to these questions vary; management archaeologists often witness discrepancies in survey results, while academic archaeologists may perceive these questions as nonproblems. Parts of the Winona district, 35 kilometers south of Flagstaff, Arizona, have been surveyed up to three times by different archaeologists from different institutions using different standards and procedures. The results of these surveys are compared and contrasted with recent survey data to evaluate the effects of procedural variation and changing archaeological standards on survey data.

Powell, Marjory (Vermont)


The Isle La Motte site in the Champlain Valley of northeastern Vermont is the single Glacial Kame cemetery known in New England. First reported in 1969, a reinterpretation was undertaken in response to the impending reinterment of skeletal remains and associated grave goods. The significance of the resulting data is discussed within the context of burial ceremonialism in Vermont and the Terminal Archaic-Early Woodland continuum; for a broader perspective, past assumptions and traditional hypotheses relevant to the Glacial Kame phenomenon are reevaluated.

Pozorski, S. (see Pozorski, T.) [28]

Pozorski, Thomas and Shelia Pozorski (Pan American)

[28] LATE PRECERAMIC SOCIO-POLITICAL ORGANIZATION IN THE CASMA VALLEY, PERU

Recent investigations at the Peruvian coastal site of Huayunga revealed the presence of certain key elements of complex societal development during the late Cotton Preceramic Period (2,200-1,800 B.C.). These elements, which include corporate labor construction, technological sophistication, and social status differentiation, formed a partial foundation for subsequent sociopolitical development during the Initial Period (1,800-900 B.C.) and Early Horizon (900-200 B.C.). Components at Huayunga dating to these later time periods can also be correlated with economic and political systems centered at major sites located within the Casma Valley.

Prater, Ariadne H. (UC-Berkeley)

[35] EARLY ART STYLES AT KAMINALJUYU

Stone sculpture represents one of the most significant artifact types found at Kaminaljuyu. Several distinct styles are reflected in the currently known corpus of stone sculpture from the site and suggest a long and complex history not clearly understood despite recent studies. Many of the sculptures exemplify sociopolitical differentiation and well-developed artistic skill and representations which must have foundation in the very early periods of prehistory although the antecedent evidence is minimal and confusing. This paper explores the question of antecedent styles and regional/indigenous artistic development.

Qoyawayma, A.

Prezioso, Susan C. (SUNY-Binghamton) and Vincas P. Steponaitis (North Carolina)

[68] THE DEVELOPMENT OF LATE WOODLAND SETTLEMENT PATTERNS IN CENTRAL NEW YORK: NEW EVIDENCE FROM THE BOLAND SITE

Three seasons (1985-1987) of excavations at the Boland site in Broome County, New York have uncovered a Carpenter Brook phase (A.D. 1000-1100) occupation. The discovery of a single palisaded line and at least two longhouses make Boland the only fortiﬁed multi-structure village of this early Owasco phase. The absence of superimposed house patterns as well as low artifact density indicate short-term occupation, a rare discovery for the Late Woodland stage. This aspect of the Boland site provides valuable data on village organization and structure. The implications of these ﬁndings in relation to the generally accepted hypothesis of the development of Late Woodland settlement patterns are discussed.

Price, J. E. (see Lynott, M. J.) [52]

Price, T. D. (see Schoeninger, M. J.) [57]

Procter-Weiss, Rebecca (Washington-St. Louis)

[14] DESIGN STRUCTURE IN THE CERAMICS OF POT CREEK PUEBLO

The hypothesis that design structure is more amenable to objective study and is more reflective of pottery-making groups than design motifs or elements, which were more freely transferred across the prehistoric Southwest, is the basis of a research project in northern New Mexico. This hypothesis is being tested by examining painted pottery from Pet Creek Pueblo, a multi-story Anasazi structure (A.D. 980-1325). A classification is employed that utilizes categories denoting how design parts are laid out on a vessel to form a completely decorated surface. Emphasis is on reconstructing design structure from sherds, since few whole vessels are available.

Pulsipher, Lydia Mihelic (Tennessee)

[16] GEOGRAPHIC FIELD METHODS FOR ASSESSING LOCATIONS, TECHNIQUES, CROPS,

AND THE IDEATIONAL ROLE OF SLAVE GARDENS IN THE CARIBBEAN

History indicates that beginning in the 17th century Afro-Caribbean people cultivated subsistence and cash crops to enhance their diet and to trade for cash or material items. Archaeology on Galway Plantation, Montserrat, W.I., conﬁrmed that such items were possessed by slaves. The following methods were used to assess the landscape evidence of this resource management strategy: geographic survey of relic agricultural land forms and irrigation efforts on plantation hinterlands, ethnography of the crops and techniques presently employed by traditional cultivators, and mapping of all folk place names with folk explanations, noting especially those implying agriculture or related resource management.

Purser, Margaret (Sonoma State)

[54] TALES FROM THE BISHOP’S BODEGA: LATE COLONIAL CERAMICS FROM ANTIGUA,

GUATEMALA

Excavated materials from the colonial capital of Antigua, Guatemala document Guatemalan participation in a rich, multi-national trade in Chinese and European ceramics. These assemblages also reveal a flourishing local industry stylistically distinct from those of neighboring Hispanic New World colonies. This rich body of data supports two major arguments. Archaeological data from later periods of Latin American history provide an analog and signiﬁcant information about European expansion in the New World, and the development of global market systems. This information highlights and critiques what are often Anglo-dominated interpretations of expanding Western capitalism in the eighteenth and nineteenth centuries.

Pyke, Mary E. and Arthur Demarest (Vanderbilt)

[35] THE EVOLUTION OF CIVILIZATION IN SOUTHEASTERN MESOAMERICA: NEW EVIDENCE FROM EL MESAK, GUATEMALA

Excavations during the second season at El Mesak in the Mar Azul estuary system of Pacific Coastal Guatemala made a number of surprising discoveries. These include evidence of the earliest ceramics, salt production, and public architecture yet discovered in Guatemala. The well-deﬁned ceramic sequence, ecological data, economic evidence, and architecture indicate the gradual development of complex society in this region. By circa 900 B.C., El Mesak was part of a chiefdom participating fully in the “Olmec” symbolic system. This paper discusses this evidence and its implications for the nature and evolution of the Olmec civilization in eastern Mesoamerica.

Qoyawayma, A. (see Bishop, R. L.) [12]
Radisch, William H., Rodney J. Snedeker and Michael A. Harmon

[27] TRENDS IN ARCHAIC MOBILITY AND SITE FUNCTION IN THE APPALACHIANT SUMMIT

Based on artifacts recovered from a sample of sites in the Pinganh and Nanthalah National Forests in North Carolina, it is illustrated how lichic raw material types, tool diversity and condition, and site location inform on models related to Archaic settlement mobility and site function. Models proposed for the Mountain and Piedmont regions are discussed and evaluated. These models are generally applied at an intra-regional scale of analysis, although similar social, temporal, and geographical trends have been observed which allow for meaningful comparisons at an inter-regional scale. An attempt is made to lower the “theoretical barrier,” which seems to exist, between these two regions in order to open up avenues for inter-regional comparisons.

Rago Volk, Anna M. (Colorado)

[56] FORMATIVE VILLAGES IN SOUTHERN PACIFIC COSTA RICA: COMPARISONS WITH THE INTERMEDIATE AREA

Recent archaeological investigations in the Diquis region of southern Pacific Costa Rica indicate that small sedentary villages emerged ca. 500 B.C. on the higher terraces along major rivers. Surveys, test excavations of habitation sites, and evaluation of previous research suggest that the inhabitants of these villages developed strategies to exploit the great diversity of wild resources of the tropical forest. In contrast to western Panama's agricultural villages, seed-crop cultivation did not play a significant role in the economy, suggesting that divergent adaptations to the tropical forest existed during the Formative Period in the Intermediate Area.

Ramansky, Ann (Louisiana State)


Archaeological perceptions of aboriginal societies in the sixteenth-century Southeast have varied according to prior assumptions of stability or instability. The assumption of stability facilitates the use of the direct historical approach or other analogical arguments to identify particular ethnographic units or describe the structure of Southeastern societies. An assumption of instability allows archaeologists to identify and document probable sources of instability. Although instability is currently more popular, neither assumption is any closer to explaining aboriginal change in the sixteenth century. To do so requires theoretical constructs that can be evaluated against the archaeological record. Preliminary notions of this construction are considered.

Ramsey, John and Irwin Rovenstine (North Carolina State)

[49] PHYTOLITH EXTRACTION FROM EQUID TOOTH CEMENTUM

At the request of the Oriental Institute (Naples, Italy), wild ass teeth from a series of sites in Yemen were submitted for phytolith extraction. Technical improvements were developed to separate adhering soil and cementum without scraping, avoiding interference with potential surface wear data. Cementum samples yielded an abundance of plant bioliths in excellent condition. Several identifiable forms provide evidence of the dietary pattern—and by extension, environmental data. With appropriate sampling and comparison of data from several sites, this technique should provide a major source of significant data bearing on patterns of animal husbandry and pastoralism in the past.

Rapp, Jr., George (Minnnesota) [Discussant 38]

Rappaport, David (New Mexico) and Lawrance C. Todd (Boston)

[41] BODY SIZE, SEASON, SEX, AND BUTCHERY: INTERRELATIONS ABOUT STORAGE AND TRANSPORT THROUGH FAUNAL ANALYSIS

Factors such as season, prey body size, and sex that influence hunter-gatherer decisions about hunting tactics, butchery techniques, transport choices, and storage practices can be investigated through analysis of archaeological faunal remains. Examination of a sample of bison [MIN-15] and bighorn sheep [MIN-16] from a hunter-gatherer occupation site in northwestern Wyoming focuses on documentation of interrelationships between body size, season of death, skeletal element counts, cut mark locations and frequencies, breakage, and distributional patterns. These data are used to infer two patterns of game animal use with bighorn sheep being killed during a restricted period and introduced as stored foods, while the bison were taken over a longer period of time and used on a more immediate basis.

Rehren, Charles A.

Rattray, Evelyn C. (Instituto de Investigaciones Arqueologicas)

[14] THE TEPEJI THIN ORANGE PROJECT

The Tepeji Archaeological Project has two major objectives: 1) to recover the origins of the famous Mesoamerican archaeological ceramic, Thin Orange and 2) the experimental reproduction of the ceramic. A study of potsherds in the region who use similar clays and techniques has helped us to understand development of the ceramic and the techniques and some of the commercial aspects involved in its production and distribution of the ware. Archaeological sites in the region are large with pyramids, ball courts, house compounds and sometimes 100 percent Thin Orange on the surface. Nearby are banks of exposed clay and deep beds of Aztecist chert, the two essential ingredients for making Thin Orange. Results of the first two seasons of field work are presented.

Rautman, Allison F. (Michigan)

[53] AGRICULTURAL RISK AND SUBSISTENCE STRATEGIES AT THE KITE SITE, CENTRAL NEW MEXICO

Resource procurement and mobility during the pithouse period of central New Mexico involved selection among alternate subsistence strategies that included variable combinations of hunting, collecting, and cultivating. Temporal and spatial variability in modern climatic data are used to develop a model that identifies loci of maximum resource reliability and postulates expected patterns of mobility and land use by part-time agriculturalists. Implications of the model are tested using excavarad data from the Kite Site pithouse village (LA 3644).

Raxxas, C. P. (see Swetzy, W. R.) [56]

Redding, Richard W. (Cranbrook Institute of Science)

[71] SUBSISTENCE SECURITY AS A SELECTIVE PRESSURE FAVORING INCREASING CULTURAL COMPLEXITY

The evolution of cultural complexity after the appearance of food production must be seen as the result of the interaction of a number of pressures operating on the societies. The relative importance of the pressures undoubtedly varies temporally and spatially. However, a model based on the assumption that the most important selective forces have been increased reliability of the subsistence base yields a number of interesting predictions. These predictions are examined and, while not formally tested, are compared with data from the Near East and North Africa.

Redmond, Brian G. (Cleveland State College, Indiana)

[76] POTS AND PANS: AN EXAMINATION OF CERAMIC VESSEL FUNCTION AND EARLY MAIZE SUBSISTENCE PRACTICES IN THE LOWER OHIO RIVER VALLEY

Beginning around A.D. 800 in the central and southern portions of the Eastern Woodlands, a conspicuous increase in the diversity of ceramic vessel forms appears to have co-occurred with the intensification of maize production. In the lower Ohio Valley, Emergent Mississippian ceramic assemblages dating to this period exhibit jar and bowl forms with widely varying morphological characteristics. During this same time period the first evidence of significant maize production appears. Data acquired from a recent analysis of Yankstown Phase ceramics are used to examine the functional relationships between vessel form and subsistence for early maize-producing populations of this region.

Rents-Budet, Dorie (Duke) and Virginia Fields (UC-Santa Barbara)

[75] CLASSIC MAYA JADE AND SLATE ARTIFACTS FROM COSTA RICA

Thirty-five Early Classic Maya jade celts and slate mirror backs have been found in Costa Rican burials. These represent an incomplete assemblage of specialized artifacts closely associated with Maya elite rituals and ceremonial events performed by royal individuals. The hieroglyphic texts and meanings of the objects among the Maya are discussed as are the socio-political processes by which they may have left Mayan hands. Also addressed are the socio-political implications of Costa Rican acquisition of elite Maya artifacts, and the trade routes suggested by the Costa Rican archaeological data.

Reber, Charles A. (Wyoming)

[32] PURSUING THE PAST TO FURTHER THE FUTURE: RESEARCH, EDUCATION, AND ECONOMIC DEVELOPMENT AT THE HIGH PLAINS ARCHAEOLOGY PROJECT

A multi-faceted NSF/EPSCoR research endeavor in southeastern Wyoming has concluded the second of three field seasons and substantive results can be reported which relate numerous changes in occupational intensity (Paleoindian through Early Historic) to a theoretical framework emphasizing migration dynamics. Although centered at several stratified sites, the project has discovered and tested several Buon kiln sites, rockshelters, defensive sites and burials reflecting prehistoric warfare, ceremonial rock alignments and trail markers, lithic tool caches, tipi ring sites, and historical sites.
Also of interest is a successful campaign to increase research funding by incorporating public education and local economic development at a large field lab/visitor center building complex.

Reher, C. A. (see Kornfeld, M.) [54]

Reid, J. Jefferson (Arizona)

[71] CRITICAL REFLECTIONS ON AMERICAN ARCHAEOLOGY 1963 - 1987

Twenty-five years of research at Grasshopper, Arizona, provide a unique case for critically examining the intellectual trends and socio-political conditions of American archaeology. Began in 1963 along established lines of archaeological inquiry, Grasshopper research soon shifted to embrace the "new archaeology." Again in the mid-1970's, research was redirected through principles and procedures of behavioral archaeology. In addition, prominent social and political themes became embedded in the program. The forces of change are discussed as they reflect the dramatic, recent history of American archaeology.

Reid, Kenneth C. and James D. Gallison (Washington State)

[17] ARCHAEOLOGICAL DEPTH PERCEPTION IN TWO NORTH PACIFIC RAINFORESTS

Open sites in the insular and peninsular rainforests of northwestern North America are notoriously hard to find. Once found, they present more opportunities than usual for error in definition and interpretation. "Forest plowing" by gale-felled trees, aerial earth ball formation and deposition, and assemblage turnover are examined as processes contributing to vertical variability in prehistoric open sites, using examples from the Tongass and Olympic rainforests.

Reinburg, Kathleen (Foresight Science & Technology) [Discussant 33]

Reitz, Elizabeth J. (Georgia)


The South has long been considered "The Kingdom of Pork." Documentary evidence indicates that a great deal of pork was being transported throughout the South. Travelers also reported consuming vast amounts of pork. However, the zooarchaeological evidence from Charleston indicates that diets in Charleston included more beef than pork, regardless of status. Exploring the differences requires considering limitations with both zooarchaeological and historical evidence. It appears that the notion that pork was the major meat of the antebellum south was not universally true and that historical evidence can be expanded by the archaeological record.

Reitz, Elizabeth J. (Georgia)

[44] ZOOARCHAEOLOGICAL EVIDENCE FOR SUBSISTENCE AT LA FLORIDA MISSIONS

Missions in La Florida were the primary focus of Spanish efforts to change Native American culture. Although food is an important aspect of culture and culture change, it is commonly overlooked in documentary accounts of colonization. Hence study of archaeological food remains from missions is an important source of information. Unfortunately, there are very few data from the missions of La Florida. Most of this review therefore concentrates on the zooarchaeological evidence from Santa Catalina de Guale. These data document that mission subsistence was substantially different from native or Spanish diets.

Reitz, E. J. (see Masucci, M.) [73]

Reitz, E. J. (see Scarry, C. M.) [22]

Renfrew, Colin (Cambridge)


Rensink, E. (see Roebrooks, W.) [24]

Reynar, Jonathan E. (Illinois State)

[58] WOMEN IN ARCHAEOLOGY: AN INTRODUCTION AND SOME HISTORICAL NOTES

Women have played an important role in American archaeology, although often their contributions have been overlooked and undervalued. An introduction to the symposium is given that highlights a few of these women and their contributions to our discipline.

Rice, Don S. (Virginia)

[6] DOMESTIC ARCHITECTURE AND SITE STRUCTURE AT EL YARAL, SOUTHERN PERU

The site of El Yaral consists of architectural terraces and structures which overlook the Moquegua River at approximately 1,000 meters above sea level in the Osmore drainage. The major construction episode at the site is radiocarbon dated between A.D. 1027±50 and A.D. 1252±50 (calibrated), and that occupation would appear to represent an extension of coastally-affiliated peoples in the upper valley after the decline of Tiwanaku presence there. This paper reports the complete excavation of eight structures at El Yaral, describing both the architectural forms and cultural contents of the units. These data are the basis of speculation about the internal organization of the site, and comparisons between El Yaral and other Late Intermediate communities in the Osmore drainage.

Rice, Patricia (West Virginia)

[66] HUMAN IMAGES ON CAVE W£ALS AND BONE: EMPIRICAL COMPARISONS

Relative to the number of animal images painted and engraved on cave walls and engraved on bone, human images are rare. Since cave walls and bone are different support media for art, it might be argued that the explanation of humans on cave walls is different from the explanation of humans on bone supports. Using an empirical and regional approach, human images on cave walls and bone are compared to animal images and archaeofaunal deities. The hypothesis is tested that the explanation of the human images in the European Upper Paleolithic is consistent for both cave walls and bone.

Rice, Prudence M. (Florida), Peter Burgi (Chicago), Mary Van Buren (Arizona) and Geoffrey W. Conrad (Indiana)

[6] TORATA ALTA, AN INKA-SPANISH SETTLEMENT

The site of Torata Alta is a small hilltop site with Inka and Spanish ceramics on the surface. Although the quality of stonework is rough, the architectural layout is well-preserved, the site being laid out in a grid with streets dividing it into 27 blocks. Much of the site appears to be residential in function, with possible social or functional differentiation suggested by characteristics of construction and ceramic frequencies. Limited excavations suggest a pre-1600 construction date and the possible presence of a church at the site.

Richards, J. B. (see Kealhofer, L.) [55]

Richardson, III, James B. (Carnegie Museum of Natural History), Jeffrey T. Hsu and Daniel H. Sandweiss (Cornell)

[28] ENVIRONMENTAL DYNAMICS AND THE INTERPRETATION OF PATTERNING IN PRECERAMIC REMAINS FROM SOUTH COASTAL PERU: UPLIFT AND SEA LEVEL

The coast of Peru south of Ilo (17 degrees south latitude) presents well-defined and extensive marine terraces at 20, 50, and 100 meters above mean sea level with associated preceramic sites, including a large midden site dated between 5,000 and 10,000 B.P. Interpretation of settlement logistics and subsistence patterns for these sites depends in part on identifying the dominant processes of rapid environmental alteration in the area. Although the condition of the terraces initially suggested rapid uplift, recent geochronic and geomorphologic studies indicate slow uplift rates and argue for post-glacial sea level rise as the dominant process affecting the Holocene landscape and preceramic human occupations.

Richardson, III, J. B. (see Moseley, M.) [50]

Richey, K. D. (see Cochran, D. R.) [64]

Rigaud, Jean-Philippe ([Discussant 17]

Riggs, Brett, Norman D. Jefferson and George M. Crothers (Tennessee)

[52] CONFLICT AND STRESS AT HIWASEE OLD TOWN DURING THE AMERICAN REVOLUTION

During the late eighteenth century traditional Cherokee culture was severely disrupted by open conflict with Anglo Americans. Ethnohistoric accounts indicate that Hiwassee Old Town, a Cherokee village in southeastern Tennessee, played a principal role in this border warfare and was destroyed twice during the 1780's. Recent excavations at the town site have documented a substantial late eighteenth century Cherokee component. The archaeological manifestations of wartime social and economic stress at Hiwassee are examined through a comparison of contextual and assemblage patterning with that evident at nearby mid-eighteenth century Overhill Cherokee sites.
Rollefson, G.

size variation may confound multiple sources of inter-assemblage variability. Several approaches to correcting for sample size differences are explored: 1) inter-assemblage pooling of counts to create large samples, 2) sub-sampling of assemblages to equalize sample sizes, and 3) simulated derivation of sample size dependent frequency distributions. These methods are compared in the analysis of seasonal artifact assemblages from 49 historic Navajo sites on Black Mesa, Arizona.

Roebrooks, Wil, Jan Kolen and Erolco Rensink (Leden)


The problem of interassemblage variability is attacked from a "behavioral" rather than a typological point of view. Focusing on the organization and procurement of raw materials at a regional scale, the "Mousterian problem" is interpreted as being the consequence of two basic strategies: local manufacture or transport of stone artifacts. The heuristic value of this explanation is demonstrated with data from the European Middle Paleolithic.

Rogers, J. Daniel (Smithsonian)

[36] DISPERSED COMMUNITIES AND INTEGRATED HOUSEHOLDS: A PERSPECTIVE FROM SPIRO AND THE ARKANSAS BASIN

The changing nature of households and territorial relations in the Spiro region is explored by examining chronological variation in the dwelling shape and size and functional implications derived from associated artifact assemblages. The growth and development of the "extended community" in the immediate Spiro area, from the Harlan Phase (A.D. 850-1250) to the Spiro Phase (A.D. 1250-1450), reveals organizational changes interpreted as being associated with the decreasing role played by "family level" social mechanisms and the expanding role of supra-local forms of control and integration.

Rogge, A. E., Patrick M. O'Brien and Everett J. Bassett (Dames and Moore)

[45] GOING DOWN THAT LONG LONESOME CORRIDOR

Projects such as highways, pipelines, transmission lines, and, more recently, fiber optic cables often create large, narrow study areas that seem totally arbitrary from a normal research perspective. The results of regulatory studies for such corridors often amount to little bits of information about a lot of unconnected pieces. Although such data contribute to regional data bases, they are often unsatisfying in terms of immediate research results. Corridor studies are used to illustrate how the limitations of corridor studies can sometimes be overcome through 1) regional setting studies (that can be GIS assisted), 2) focusing on appropriately scaled research questions, and 3) regulatory flexibility that encourages trade-offs.

Rolett, Barry (Harvard)

[43] THE POLYNESIAN ANALOGY TO PLEISTOCENE FAUNAL EXTINCTIONS: NEW EVIDENCE FROM THE MARQUESAS ISLANDS

Numerous studies document the extinction of Polynesian land birds following human settlement of previously uninhabited islands. The pattern of Polynesian bird extinctions has been discussed as an analogy to continental faunal extinctions during the late Pleistocene. New evidence from excavation of a stratified coastal habitation site on Tahua, in the Marquesas Islands, allows redefinition of this analogy. The Marquesan data provide the first well-dated sequence of land and sea bird extinctions recorded in cultural context for the tropical Pacific. Implications of these data and evidence from other Polynesian islands are discussed in light of the Pleistocene faunal overkill hypothesis.

Rolland, Nicholas (Victoria) and Harold L. Dibble (Pennsylvania)

[24] MIDDLE PALEOLITHIC ASSEMBLAGE VARIABILITY: A SYNTHESES OF CURRENT ARGUMENTS

The classic debate on Mousterian assemblage variability originally focused on two principal factors that were thought to underlie lithic variability: style and function. Recent studies, however, have demonstrated that many significant constraints on lithic variability are imposed by aspects of raw material, technology, and even post-depositional factors. Thus, it is becoming increasingly clear that no single explanation is sufficient to account for observed variation in the industries. Based on evidence from the Upper Pleistocene of Western Eurasia, we propose here a new synthesis of the various factors that appear to work together to produce typological variability as it is currently measured and discuss implications for the understanding of hominid behavior during this time.

Rollefson, G. (see Kafafi, Z.). [81]
Roper, Donna C.

[32] ECONOMIC CHANGE IN THE VILLAGE PERIOD ON THE CENTRAL PLAINS

The dual economy of the historic Central Plains villagers is traditionally thought to post-date the invention of the horse, little economic change is assumed for much of the prior millennium. Subsistence and settlement data, however, reflect fundamental change earlier. Indicated is a shift from diverse to restricted catchments, generalized to specialized diets, population dispersal to aggregation, and a logistical settlement strategy to a sharply differentiated economy with village residence part of the year and residential mobility during the remaining months. This shift largely was complete in protohistoric times, before acquisition of the horse.

Rossen, Jack (Kentucky)

[28] THE NANCOCHE CULTURE: PRECERAMIC HORTICULTURALISTS OF THE UPPER ZANA VALLEY, NORTHERN PERU

In 1987, as part of the long-term Zaña-Niepo Archaeological Project, excavations were conducted at a series of early Middle Preceramic sites in the Quebrada de Las Pircas, in the Nanchoc branch of the upper Zaña Valley. These excavations yielded the remains of houses, burials and activity areas within intact subsoil deposits, preliminarily dated at 7,800 B.P. Various lines of evidence suggest a semi-sedentary to sedentary horticultural lifestyle. The distinctive nature of this western slope Preceramic culture and its contribution to the foundations of complex Andean society are discussed.

Roth, Barbara (Arizona)

[61] CHANGING PERCEPTIONS OF THE LATE ARCHAIC: AN EXAMPLE OF THE TUCSON BASIN

Research on the Late Archaic in the southern Sonoran Desert has resulted in substantial new data for interpreting Late Archaic adaptations. Recent excavations have documented agricultural villages along major waterways by 2,500 B.C. Changing interpretations of the Late Archaic are examined using data from the Tucson Basin Survey. A shift to more intensive use of the floodplain owing to the adoption of agriculture is discussed and the mechanisms responsible for these changes are analyzed. Conclusions are offered concerning implications these shifts have for understanding cultural period developments in the Sonoran Desert.

Rovner, Irwin (North Carolina State)

[49] NEW METHODS OF MICROSCOPIC IMAGING AND RAPID IMAGE ANALYSIS OF CHAOTIC MICROPARTICLE MORPHOLOGY

Two new methods of microscopy—acoustic and laser optical—provide better, more efficient rapid imaging of phytolith assemblages either in vivo or with minimal preparation. The same image can be used for recording, measuring and analyzing both articulated groups and individual particles (disarticulated assemblages). Output can be sent directly to a computer-based imaging analysis system for automatic and interactive stereological analysis. Both methods yield a vertical sequence of stacked images for reconstruction and analysis of three-dimensional morphology. These new technologies regularize large populations of particles with wide morphological variation as occurs in phytolith assemblages and other microfossil systems.

Rovner, I. (see Ramsey, I.) [49]

Rowley-Conwy, Peter (Memorial-Newfoundland)


The rise in sea level in the early fourth millennium B.C. brought many new marine resources to the Danish-South Swedish area. Various local economic systems emerged due to local ecological variations. The successful nature of these marine-based economies was one reason why farming appeared relatively late. Environmental changes may have been the reason why agriculture finally spread into southern Scandinavia at the end of the fourth millennium B.C., after a long period of contact between the hunter-gatherers and farming cultures to the south.

Rudolph, James L. (URS Consultants)

[37] OVEREXTRACTION AND SIZE SELECTION AS EXPLANATIONS OF VALVE LENGTH IN MYTILUS CALIFORNIANUS

The abundance of very small mussels (Mytilus calificrinus) at sites in northern Santa Barbara County, California has been attributed to overexploitation. However, recent research suggests that size selection by sea otters and humans may also have been important. The length of mussels from a Middle period shell midden averaged 4.4 cm and many individuals were too small to have reached reproductive maturity. Sea otters have been known to avoid mussels of this size or smaller. Also, in cases of low intensity exploitation by humans, the energy to dislodge mussels might have favored the selection of smaller individuals.

Rudolph, Teresa (UC-Santa Barbara)

[52] A TRIBAL CEREMONIAL CENTER IN REGIONAL CONTEXT

Tribal ceremonial centers have been linked to long-distance exchange networks, surplus horticultural products, and redistribution of subsistence goods during times of scarcity. In all of these explanations, the function of the center needs to be examined within its regional context. The regional settlement patterns and the changing occupation of a ceremonial center in central Georgia are examined from A.D. 100 to A.D. 700 to address questions of resource scarcity and abundance. The analysis focuses on site locations in relation to abundance and diversity of resources, risk of resource failure, and use of domesticate plants.

Rue, David J. (WAPORA, Inc.)

[45] INTERSITE ANALYSIS OF 20 LITHIC ASSEMBLAGES FROM A 140 MILE PIPELINE RIGHT-OF-WAY IN SOUTHERN INDIANA

The majority of sites discovered in southern Indiana by a pipeline survey are found to be short term occupation, resource procurement camps with minimal habitation, based on extensive testing. An inter-site study of the lithic assemblages of twenty sites is presented utilizing the statistical technique of cluster analysis. The cluster analysis, using broad categories of debitage stages and tools, yielded typological and stratigraphic site characterizations. Beyond raw material sourcing and determining typology through diagnostic analyses, analysis of the ratios of different artifact classes (including reduction stages) is the most important source of information on site function to be obtained from such sites.

Ruff, Barbara (Georgia)

[15] FAUNAL REMAINS FROM A JEWISH HOUSEHOLD, OLD WASHINGTON, ARKANSAS

Vertebrate fauna from an antebellum urban farmstead in Old Washington, Arkansas were studied. The materials are associated with a prominent merchant family which was Jewish. Analysis of the fauna reveals a pattern of subsistence that emphasized domestic animals, including pork. A wide variety of wild mammals, birds, and fish were also found. In many respects this pattern conforms to urban subsistence data from comparable sites of the southern Atlantic coastal plain rather than conforming to kosher rules. This suggests that economic and environmental factors may have influenced the household’s subsistence choices within a religious framework.

Rufo, Ann (Hospital of the University of Pennsylvania) and William Glanzman (MASCA-Pennsylvania)

[38] MEDICAL APPLICATIONS OF X-RAY TECHNOLOGIES IN ARCHAEOLOGY

A review of past applications of x-radiography to Egyptian and Peruvian mummies, Japanese wooden sculpture, Chinese Bronzes, etc., will be followed by a discussion of how the latest advances in x-ray technology—CAT scanning, digital image enhancement, and xeroradiography—also have appreciable potential in archaeology. The use of xeroradiography in the study of pottery manufacturing methods will be described in detail, drawing on examples from Neolithic Iran, Bronze Age Syria-Palestine, and pre-conquest Peru.

Rufo, A. (see Glanzman, W.) [38]

Ruhl, Donna (Florida Museum of Natural History)

[44] SPANISH MISSION PALEOETHNOBOTANY: AN OVERVIEW AND SOME SPECULATIONS ON SIXTEENTH AND SEVENTEENTH CENTURY LA FLORIDA

Analyses of floral remains from sixteenth and seventeenth century Spanish mission sites of La Florida have been concerned primarily with gaining information about subsistence systems (i.e., plants used as food), which is the traditional method of inquiry and information sought from the generated archaeobotanical data. Recent research has provided data on non-subsistence plant utilization (e.g., architectural and ecclesiastical uses) as well as broadening our understanding of Mission subsistence and social organization providing insights into frontier settlements and lifeways, culture contact, and acculturation studies.

Russell, K. F. (see Larsen, C.) [44]

Rust, William F. (Pennsylvania)

[69] OLMEC SETTLEMENT EVIDENCE FROM LA VENTA

Recent settlement research at La Venta, a major Olmec center on the Mexican Gulf Coast, reveals evidence of initial occupation during the Early Preclassic period (ca. 1,750-1,150 B.C.) along levees of
the silted-in Rio Barí north of the site core, in an environment changing from estuarine to riverine. Lowlands surrounding La Venta, previously thought to have been swampy and virtually uninhabited during La Venta’s main occupation, instead contained numerous villages along this newly-discovered riverine focus. During its peak period as a civic-ceremonial center (ca. 800-500 B.C.), La Venta itself contained dense areas of domestic settlement and headed a local three-tiered site hierarchy with social distinctions extending to peripheral Rio Barí sites.

Sabloff, Jeremy A. (Pittsburgh)

[23] WHERE TO FROM HERE? THE ROLE OF THE PROFESSION IN THE LOOTING PROBLEM

Looting and vandalism is a major crisis that the archaeological profession cannot ignore. To address this critical problem, we must first understand the extent and effect of looting of sites, the motives of looters and vandals themselves, and public perceptions of the issue. Second, we must help prevent the problem by working to share the results of research, to educate the public about the importance of archaeology, and to change public attitudes. Third, we must help combat the problems through working for better law enforcement, better legislation, and more funding and better training for those who deal with this issue.

Sabloff, Jeremy A. (Pittsburgh)


Sackett, James (UCLA)


Much of today’s best empirical research on the dynamics of stone tool variation is being pursued by Mousterian specialists. However, the theoretical implications some draw from their work are often grounded upon assumptions and explanations of questionable validity. The argument that Middle Paleolithic industries reflect symbolic behavior different in kind and degree from that seen in Upper Paleolithic ones is critically examined. Despite what other realms of artificial evidence might suggest, the lithics themselves fail to support the notion that the Mousterian represents a stage of “protoculture” somehow less fully human than the Upper Paleolithic lifeway that followed it.

Salgado, Silvia (SUNY-Albany)

[62] FUNERARY PATTERNS OF THE MIDDLE POLYCHROME PERIOD IN THE SOUTHERN SECTOR OF GRAN NICOA

The funerary patterns of the Greater Nicoya archaeological region (Nicaragua and Costa Rica) are poorly known. Mortuary information for the Middle Polychrome period (A.D. 800-1200) includes data on habitation sites and cemeteries. Regularities in mortuary behavior during the Middle Polychrome period are discussed. Ethnographic data are used to help characterize the period.

Salter, Robert (Beloit)

[60] MISSISSIPPIAN WARFARE: ARCHAEOLOGY, ORAL HISTORY AND ROCK ART IN THE UPPER MIDWEST

Employing the results of research in a wide variety of approaches to the past, it is possible to gain new insights into the variety of institutionalized patterns of inter-group conflict that characterize the Mississippian period. Data indicate that aggression was motivated by a range of mechanisms that articulated with multiple aspects of the lives of the peoples of the upper Midwest. Oral traditions and rock art are shown to add surprisingly rich dimensions to the archaeological record.

Sanders, William T. (j) and David L. Webster (Pennsylvania State)

[57] THE CONJUNCTIVE APPROACH REVISITED: THE ARCHAEOLOGY OF COPAN IN THE 1980's

A paradox has emerged in archaeology over the past 30 years. Because of the continuing association between ethnographers and archaeologists as well as the technological development in archaeological methods and their linkage with other sciences, detailed reconstructions of ancient cultures are now possible. This requires an unusually rich data base because of the twin problems of cost and sampling. We must focus on relatively small regions, apply long-term commitments of funds and personnel, and employ methods from different fields of science. Research conducted at Copan, Honduras, including several related projects between 1974-1988, are discussed with respect to the above points.

Sanders, Daniel H. (Cornell)

[15] ETHNOHISTORIC AND ARCHAEOLOGICAL REWARDS FOR THE FISHERMEN OF CHINCHA, PERU

Archaeological investigations of a Chincha fishing settlement—including analysis of the faunal remains—provide partial support for a model of community specialization based on a sixteenth century document. The presence or absence of species and relative abundance of skeletal elements by species show a preponderance of maritime (versus terrestrial) animals in the meat diet of the site’s inhabitants. The frequency data for skeletal elements of fish suggest that fish were processed at the site, probably for exchange. The faunal data also support the differentiation of elite and common sectors of the settlement initially based on architectural and documentary data.

Sandel, D. H. (see Richardson, III, J. B.)[28]

Santer, David (Maine)


During the past two decades models of seasonality on the Maine coast have fluctuated as scholars first placed heavy reliance on ethnographic sources and then eschewed them almost completely. The revisionist literature has stemmed from ever more sophisticated seasonality estimates derived from shell middens. Following a review of some of the major seasonality models, the data and assumptions of each can be evaluated critically. The paper concludes with an examination of the most effective way to integrate various data sets, including ethnohistorical sources, biological indicators, style analysis, and settlement pattern information.

Santa, Geralda (IBMO)

[72] SOCIAL EVOLUTION IN EASTERN ARABIA ACCORDING TO BURIAL DATA

Since 1978 archaeological fieldwork has disclosed throughout the Oman peninsula the first systematic evidence for the trends of Arabian social evolution during the Holocene. While the archaeologi- cal record for settlement sites is quite inconspicuous, graves are abundant and easy to access. The distribution of cairns provides information on population distribution and locational strategies. Excavation of a first sample points to an increasing trend around 3,000 B.C. toward group burial, suggesting lineage groups that foreshadow Arabian tribalism.

Sankey, Robert S. (New Mexico)

[46] URBAN-RURAL INTERRELATIONSHIPS AT MATACAPAN, VERACRUZ, MEXICO

Cities are often defined as large, densely nucleated communities occupied by specialists who provide a variety of goods and services to rural populations distributed around them. The utility of this definition is evaluated on the basis of recent research in the Tuxtlas Mountains of southern Veracruz, Mexico. The large-scale population nucleation that took place at Matacapan, the major center in the area, appears to have occurred mainly in response to political factors, whereas the development of a specialized craft economy seems to have occurred for a number of reasons, some political and others economic. Moreover, most specialized craft production was in the countryside, not in the principal economic center, indicating that conventional definitions of urbanization require reconsideration.

Sankey, Robert S. (New Mexico) [Discussant] [29]

Santley, R. S. (see Pool, C. A.)[29]

Saunders, Rebecca (Florida Museum of Natural History)

[44] IDEAL AND INNOVATION: SPANISH MISSION ARCHITECTURE IN THE SOUTHEAST

The Spanish in general, and missionaries in particular, brought to the New World concepts of ideal settlements—without the labor or materials to construct them—theological alone in the wilderness of the Spanish borderlands, one or two missionaries faced the problems of building an ideal using unfamiliar materials and a sometimes reluctant work force. The sheer size of the territory the Spanish tried to settle, and the diversity of the environments and the peoples they tried to control, demanded innovative approaches. Unique architectural characteristics of each mission represent the solution of a few individuals in adapting an ideal configuration to the real natural and cultural ecology of the specific area and people.

Saville, James M. (McGill) and Don Albright (Macconald College-McGill)

[30] COMPARISONS OF PREPARATION AND EXAMINATION TECHNIQUES IN DENTAL ANNULI ANALYSIS

The potential of dental annuli in establishing the season at death of many mammalian species recovered in archaeological contexts is widely recognized. However, tooth preparation and examination techniques have varied considerably, and rarely are results "keyed" to modern specimens using identical techniques. Preparation techniques include polishing thin-sectioning, and staining with various dyes. Examination techniques include reflected light, transmitted white light, and transmitted polarized light. Accordingly, individual published studies are often difficult to compare or are inconsistent. These preparation and examination techniques are compared on a variety of marine and terrestrial mammals of known date of death.
Schortman, Edward M. and Patricia A. Urban

Schmitt, Dave N. (Intermountain Research) and Kenneth E. Juell (New Mexico)

[43] ON THE PROVENANCE OF CARNIVORE SCAECAL FAUNAL ACCUMULATIONS IN ARCHAEOLOGICAL CONTEXTS

One of the most important, and at the same time most difficult, tasks in zooarchaeological inquiry is the differentiation between human and non-human processes responsible for fossil accumulations. While recognition of some accumulative mechanisms remains indiscernible due to our taphonomic naivety, detailed observations on bones in carnivore feces indicate that most become corrosively modified by digestive processes. Diagnostic attrition is evident in polished, particularly along fractured surfaces, pitting, and differential staining. In addition to taxonomic identification, bone fragment size and skeletal completeness may be applied to understanding typical scatological constituents. Taphonomic implications for understanding prehistoric human deposits are discussed with specific reference to scat bones from Great Basin archaeological sites.

Schneider, Fred (North Dakota) and Michael Michlich ( Moorhead State)


Archaeological investigations of the Shea site, located in southeastern North Dakota, has revealed a complex cultural assemblage that does not fit into either a Plains Village pattern or a Late Woodland pattern. The site was occupied during the mid-18th century and may reflect a people in the process of adaptation to a Plains Village life-way. The Shea site indicates that the development of village living was widespread on the Plains, and it raises taxonomic as well as processual questions about standard conceptions of Plains villagers.

Schneider, Kent A. (USFS-Atlanta) and M. R. Becket (USFS-Milwaukee)

[63] REINTERMENT IN THE REAL WORLD: MAKING IT WORK

In January, 1988 the Southern and Eastern Regions of the USDA Forest Service signed a policy for the treatment of human remains and associated grave goods. The policy, which favors reinterment, requires each administrative unit of these two regions to form an ad hoc group and write a treatment action plan. This paper focuses on the development of these action plans, which were completed in January, 1989, and what the plans mean for managing human remains and associated grave goods on National Forest Land.

Schneider, K. A. (see Meier, M. G.) [27]

Schneider, K. N. (see Blakeslee, D. J.) [32]

Schoen, C. (see Bleed, P.) [54]

Schoening, Margaret J. (Harvard) and T. Douglas Price (Wisconsin)
[57] BONE COMPOSITION STUDIES IN ARCHAEOLOGY

Bone composition methods including both stable isotope (13C/12C and 15N/14N) and trace element (Sr, Zn, Ba, Mn, etc.) studies originated in Geochrony. Applying these methods derived from simple mathematical and chemical models to "messy" biological systems has been more complicated (although far more interesting) than expected originally. Use of stable isotope ratios of carbon and nitrogen in bone collagen to indicate dependence on marine foods has led to a reevaluation of our understanding of human metabolism. Multiple studies analyzing trace element composition in prehistoric populations indicate that their levels may reveal more about the diagenetic history of the bone than diet of the person when alive.

Schoening, M. J. (see Larsen, C.) [44]

Schoening, M. J. (see Levendosky, A. J.) [32]

Schoening, M. J. (see Robinson, R. A.) [67]

Schoening, M. J. (see Medaglia, C.) [67]

Schortman, Edward M. and Patricia A. Urban (Kenyon)
[79] CRAFTWORKING AREAS AND THE DEVELOPMENT AND MAINTENANCE OF SOCIAL COMPLEXITY IN A LATE CLASSIC SOUTHEASTERN MESOAMERICAN POLITY

Work at the large Late Classic Center of La Sierra and the region's smaller contemporaneous sites reveals that craftsmanship is almost entirely restricted to La Sierra, where non-local obsidian, marine shell and local (clay, fiber) materials were processed. Other sites show little craftsmanship, and none used exotic items. Many finishing products, regardless of material type, have circumscribed distributions. This contrasts with other southeastern Mesoamerican regions suggesting that manufacturing and
distribution played varying roles in developing and maintaining social complexity. These differing models will be discussed.

Schortman, E. M. (see Miller, J.) [56]

Schreiber, Katharina J. (UC-Santa Barbara)
[42] NASCA HABITATION SITES: WHERE THEY ARE AND WHAT THEY LOOK LIKE
One of the great mysteries of the enigmatic Nasca civilization (A.D. 100-600) is the apparent lack of habitation sites. This is primarily the result of biases in past archaeological research, not a real absence of habitation sites. A recent systematic survey of the middle and upper Nasca valley has located numerous Nasca sites, ranging in size from a dozen to several hundred houses. The distribution of Nasca sites is seen to be dependent on the availability of water resources and arable land. Changes in settlement patterns during the Early Intermediate Period indicate some important changes in Nasca society.

Schroeder, Kelly J. (Arizona State)
[53] HOHOKAM MORTUARY REMAINS AND VILLAGE MOVEMENT AT PINNACLE PEAK VILLAGE-AZ-U:5:3:ASU
This paper reports on the spatial location of mortuary remains, trash mounds, and pithouses at a prehistoric Hohokam site, and proposes that in addition to such controlling variables as physical environment, subsistence practice, population increase, and social stratification, the Hohokam's mortuary practices played an important role in influencing the directional growth and movement of their village. The site under investigation is Pinnacle Peak Village, located in Boulder Pass of the McDowell Mountains of southwestern Arizona.

Schulemeister, Joseph (Gilbert-Commonwealth)
[17] SOIL PHOSPHATE "PRINTS" AND THE DETECTION OF ACTIVITY LOCI AT PREHISTORIC SITES
Soil phosphate "prints" represent geochemical enrichments of sediments by cultural activities. For some time researchers have measured both qualitative and quantitative changes in archaeological sediments to classify ancient activity areas. Since; most efforts have been site-specific, the discriminatory power of the method is limited. By applying the method uniformly at functionally and environmentally distinct sites, the broad utility of the strategy is tested. In a key case, a material eastern Woodlands complex and Plains hunting camp contained strikingly similar contrasting phosphate "prints" that indexed the activities of analogous activities in contrasting settings. A generic method is suggested for standardizing presentation and interpretation of results.

Schurr, Mark (Indiana)
[55] THE SIGNIFICANCE OF MIDDLE MISSISSIPPIAN MORTUARY TREATMENTS: A STATISTICAL AND ISOTOPIC PERSPECTIVE
The social significance of mortuary variation within the prehistoric Middle Mississippian populations of the southeastern United States can be interpreted using many different referents. For example, ethographic accounts have been used as indirect evidence that some mortuary treatments are correlated with differential access to dietary resources. The conjunctions of mortuary variation with variations in the carbon and stable isotope ratios of prehistoric burials at the Angel Site (a Middle Mississippian residential and ceremonial center in southwestern Indiana) demonstrate both the limitations and advantages of ethographic and statistical analyses of prehistoric mortuary treatments.

Schwartz, Glenn M. (John Hopkins)
[46] EXCAVATIONS AT TELL RAQA': A SMALL RURAL SITE OF EARLY URBAN NORTHERN MESOPOTAMIA
The mid-third millennium B.C. site of Tell Raqa', in the middle Habur valley of northeast Syria is the focal point of an excavation project investigating the social and economic organization of a small rural community and its integration into the newly emergent urban and state systems of north Mesopotamia. Two seasons of excavation, exposing about 60 percent of the two latest third millennium occupation levels, have supplied evidence of significant social differentiation at the site and of the existence of specialized production activities extending beyond an agricultural subsistence economy.

Scott, L. (see Posse, C. B.) [67]

Scott, S. L. (see Jackson, H. E.) [56]

Shaffer, Jim G.

Seeman, Mark F. (Kent State)
The Intrusive Mound Culture has been a vague Woodland taxonomic designation in the Ohio Valley since the 1950's, but has itself remained little analytically. The historical development of this culture is reviewed in light of new information introduced relating to its temporal, spatial, and adapatational position in local sequences. The probable relationship between the Intrusive Mound Culture and the adoption of bow and arrow technology is also explored in light of Oedell's (1988) recent and Woodland innovations in projectile weaponry.

Seeman, M. F. (see Moslow, R.) [5]

Selvaggio, Mario and Robert J. Blumenschine (Rutgers)
[43] ESTABLISHING THE TAXON-SPECIFICITY OF CARNIVORE TOOTH MARKS ON BONE
Carnivore tooth marks on Pleistocene archaeological bone are frequently attributed to hyenas, because it is assumed they would be the most likely scavengers of hominid bone refuse. This assumption, however, has not been demonstrated. Hyena gnawed bone collected from naturalistic settings documents the frequency and anatomical patterning of tooth marks. As a necessary prerequisite to establishing the taxon-specificity of hyena tooth-marked bone, research on a controlled setting was conducted to document the characteristic marks produced by different hyena teeth. Methodology, results and implications of our data to interpretations of Pleistocene archaeological bone assemblages are discussed.

Shackel, Paul (Maryland-College Park) and Barbara J. Little (George Mason)
[54] HISTORICAL ANTHROPOLOGY IN ANNAPOLIS, MARYLAND: ONGOING RESEARCH
As most archaeologists in this country are aware, the goals of a "post-processual" archaeology are most feasibly addressed when both historical and archaeological analyses are combined. We use a post-processual approach and goals of understanding social, political, and ideological meanings of material culture to assess the meanings and changes of city plan and artifactual landscape in the historic district of Annapolis. Variability in the archaeological record, in the architectural record, and in landscape are interpreted with respect to changing perceptions in the city of social and political relationships and hierarchy.

Shackleton, N. J. (see Bousman, C. B.) [67]

Shaffer, Harry J. (Texas A&M)
[53] THE SWARTS RUIN REVISITED: AN ASSESSMENT OF THE 1920'S EXCAVATION AND DATA POTENTIAL
The Swarts Ruin, excavated in the 1920's, has stood as the case study for Classic Mimbres archaeology. A study of the Swarts Ruin data housed at the Peabody Museum, Harvard University, in light of the intensive investigations at the NAN Ranch Ruin by Texas A & M University, provides the basis for a reevaluation of the previous interpretations by H.S. and C.B. Conover. Their excavation methods and feature documentation are reviewed to demonstrate both the weaknesses and strengths of the Swarts Ruin data base.

Shaffer, H. J. (see Estler, T. R.) [46]

Shaffer, B. S. (see Baker, B. W.) [43]

Shaffer, Gary (Louis Berger e' Associates) and Sandro Bonardi (Università degli Studi di Parma)
[34] STENTINELLO ROCK FEATURES FROM CALABRIA, ITALY
Extensive research in the southern Italian region of Calabria has revealed one of the densest areas of Neolithic settlement known in the Western Mediterranean. The settlements on the Piano di Curinga belong to the Stentinello culture from the 7th and 5th millennia B.C. and contain well preserved wattle and daub buildings. Associated with the Stentinello structures are a number of rock features. This paper analyzes 20 of the features recovered through excavation. Geometric, morphological, and petrological data from the rock features are used for intra- and inter-site comparisons. Attention is also focused on explaining feature function and on making comparisons with other Italian contexts.

Shaffer, Jim G. (Case Western Reserve)
The archaeological record of South Asia has changed considerably over the last decade. Consequently, it is now possible to develop an interpretive model presenting South Asian development as reflecting a single cultural tradition throughout time, which culminated in a unique first millennium B.C. example.
of state formation. Moreover, it now appears that this state formation took place against a multi-ethnic background unparalleled in the ancient world and that this situation, rather than the so-called Indo-Aryan/European invasions, was responsible for the unique features and literature of the early South Asian state.

Shapiro, G. (see Jones, B. C.)[44]

Shapiro, G. (see Hatt, J. H.)[44]

Sharer, Robert (Pennsylvania)
Recent research indicates that Classic Maya political systems were the product of a complex, nonlinear process beginning well within the Preclassic era. This process occurred within a broad array of environmental and cultural regions, centered on the lowland heartland and a far more vast periphery. Consistent material and symbolic manifestations from the Preclassic archaeological record are examined as evidence of complex political evolution in both the central lowlands and the southern periphery, allowing the reconstruction of the interaction networks that generated the growth of polities upon which the Classic period political order was built.

Sheets, Puyasa (Colorado)
[75] A COMPARISON OF DIGITAL AND OPTICAL REMOTE SENSING INSTRUMENTS IN COSTA RICA
A NASA cooperative agreement provided the Project Arenal an abundance of remotely sensed imagery. In spite of the obstacles (precipitation, rainforest, multiple burials by volcanic ash layers, and relatively simple societies with minimal environmental impacts), some instruments did detect prehistoric features. Eroded footpaths were found linking sites, they are the physical remains of the prehistoric network of transportation and communication. A comparative evaluation of optical systems ranks them as follows, beginning with the most successful: color infrared, color, and black-and-white. The ranking of digital systems is: Thermal Infrared Multispectral Scanner, Ladar (lidar), Synthetic Aperture Radar, and Landsat TM.

Sheldon, Craig T. Jr., John W. Cattier (Auburn) and Gregory A. Wanselkow (South Alabama)
[76] CREEK ARCHAEOLOGY ON THE LOWER TALLAPOOSA RIVER
Recent intensive surveys, excavations, and ethnographic research in the Lower Tallapoosa River Valley of central Alabama have produced a large body of information on Protohistoric and Historic Creek Indian culture. Ongoing analysis is providing increased understanding of settlement patterns, public and domestic architecture, burial practices, material culture and culture history, as well as specific interpretations at the historic Creek towns of Hotheiwali, Pulsatto and Hickory Ground.

Shelley, P. (see Laradie, S.)[12]

Shipman, Pat (John Hopkins)
[66] SARDINIA'S EARLIEST IMMIGRANTS AND THEIR IMPACT ON THE INDIGENOUS FAUNA
The earliest known human occupation of Sardinia, Corbeddu Cave, consists of cultural levels from at least 1,500 BC to 600 BC, containing stone tools, human remains, and a well-preserved faunal assemblage. The site is important not only in terms of the initial peopling of this Mediterranean island, but also with respect to the heavy impact hunting inflicted on the indigenous fauna. The sequence of deposits records the transition from a hunting-gathering subsistence economy to one involving domestication. This study focuses on taphonomic interpretations of the cervid and canid remains, as well as examination of pathologies which may be related to environmental stress.

Shott, Michael J. (Kentucky)
[64] STONE TOOLS AND ECONOMIES: A GREAT LAKES PALEOINDIAN EXAMPLE
In forager societies, “economy” normally is identified with subsistence. In a broader perspective, however, it concerns the cultural context of production, distribution and use of goods. This perspective is especially important in eastern Paleolithic studies, where economy of use can be approached through stone tools alone. The economic practices of Paleoindian foragers in the Great Lakes region are evaluated in this way. In addition, patterns in the production, distribution and use of tools themselves—the economics of tool use—are compared between successive groups and linked to the broader cultural systems of which they formed a part.

Shott, M. J. (see Jeffries, R. W.)[5]

Siegel, M. I. (see Hyland, D.)[39]

Simon, Arley W.

Sienknecht, Alfred H. and Alistair Robertson (British Columbia)
[73] WETLAND LANDSCAPES OF LOWLAND EL ORO
"Pozas" and "pans" have been hypothesized as Prehispanic subsistence resource concentrations. New data from vertical and oblique aerial photography, intensive ground surveys, ethnographic inquiry, botanical surveys and sediments analysis is being synthesized on 1,2500 base maps for representative wetlands and their surroundings, and integrated with results from Talihun Project settlement surveys. The morphology, origin and use of the wetlands is being clarified. New oblique aerial photography over the Santa Elena Peninsula has opened comparative perspectives on resource use on the two sides of the estuary. The paper treats both methodology and substance; making central what is often introductory in archaeological exposition.

Silverman, Helaine (Illinois)
[42] THE PEOPLE WHO MADE THE NAZCA LINES: SETTLEMENT PATTERNS IN THE INGENIO RIVER VALLEY, NAZCA, PERU
For too long the Nazca lines have been treated as an astronomical, mathematical, or exotic problem devoid of cultural content. Yet, for some time we have known that they were made by the same people who painted beautiful polychrome pottery between 1700-3000 A.D. on the south coast of Peru and who inhabited the large urban sites in the same region (ca. 1000-1400 A.D.). Until recently, there has been no direct evidence linking the great ground markings to these cultures. The results of survey in the Ingenio Valley, on the north side of the pampa, provide this crucial information and yield significant new data for a broad interpretation of these phenomena.

Silvestre, Ramon (Arizona)
[31] BASKETRY STANDARDIZATION IN A TRIBAL SOCIETY
A formal typology of Kalinga basketry is presented to facilitate the study of variation in tribal, regional, material, structural and functional form, and from this initiate the beginning of a basketry standardization study. Recent studies of pottery standardization are assessed using Kalinga basketry. I demonstrate, for example, that the style of basketry that permit the identification of individual weavers in an attempt to reveal relevant dimensions between specialization and product standardization. This study further explores and fills a gap in basketry ethnoarchaeology as an additional container type along with pottery.

Simonek, Jan F. (Tennessee) and Robert C. Dunnell (Washington)
[17] ARTIFACT DENSITY, SHERD SIZE AND PLOWZONE PROCESSES AT ROBARDS FARM (DUNKLIN COUNTY, MISSOURI)
On the repeated and complete surface collections made at the Robards Farm (Dunklin County, Missouri), artifact spatial patterning over several square kilometers can be examined. This paper reports on the ceramic sherd size variation over space. For both sand and shell tempered ceramics, large sherd sizes (those significantly bigger than the average in each class) are highly localized. Large sherd sizes and concentration locations vary between temper types. These patterns are interpreted as reflecting varied site formation processes. The dynamic nature of plowzone processes and temporal variability are seen as especially relevant in explaining the observed patterns at Robards Farm.

Simmons, Alan (Desert Research Institute)
[61] PYGMY HIPPOPOTAMUS AND EARLY HUMAN ADAPTATIONS IN THE EASTERN MEDITERRANEAN
Akrotiri-Aetokremnos [Site E] in southern Cyprus represents an unique archaeological occurrence for the Mediterranean. First, it predates the earliest documented human occupation of the island by at least 600 years, if not more. Second, and more importantly, is the association of cultural materials with an extinct Pleistocene fauna, pygmy hippopotamus. A very well preserved faunal assemblage suggests butchering. Such a relationship has never before been demonstrated at the Mediterranean. The significance of Site E in terms of pre-agricultural adaptations to island environments and the possible role of man in the extinction of pygmy hippopotamus are addressed in this paper.

Simmons, A. (see Kafturi, Z.)[81]

Simon, Arley W. (Arizona State)
[14] VILLAGE SELF-SUFFICIENCY IN CERAMIC PRODUCTION: A CENTRAL ARIZONA CASE
Although the presence of ceramic specialization is a measure of increased village complexity, it has been difficult to document in sites where production was limited to plainwares. A study concerning village self-sufficiency in ceramic production is presented with implications for village autonomy and intra-regional relationships. Results are given of an integrated ceramic analysis using plainware assemblages of five large village sites (ca. A.D. 1000-1200) in the Payson Region of central Arizona.
Analyses of vessel form, performance characteristics, composition and typology are used to assess the homogeneity and continuity of ceramic assemblages among these sites.

[10] THE POLITICAL ECONOMY OF A SOUTHERN INDIAN EMPIRE

The Vijayanagara Empire dominated south India from the 14th-16th centuries A.D. The political and economic organization of that empire are examined in the context of models of imperial societies derived from earlier pre-modern imperial formations. Discussion will focus on military organization, the structure of the Vijayanagara bureaucracy, the role and influence of local rulers in supporting or subverting imperial organization, and the economic base of the empire and its political capital. Archaeological, documentary and historic evidence will be examined.

Skibo, James (Arizona)

[31] THE KALINGA COOKING POT: AN ETHNOARCHAEOLOGICAL AND EXPERIMENTAL EVALUATION OF PERFORMANCE CHARACTERISTICS

A pot use study among the Kalinga of Northern Luzon, the Philippines, provides information on the relationship between vessel performance characteristics and cooking pot selection. Nearly all the households in the village of Guina-ang have enameled metal pots for rice and ceramic pots for vegetable and meat cooking. The performance characteristics of cooking vessels and their pot selections are discussed and suggestions are offered about the role of performance characteristics in technological change. Finally, the behavioral significance of heating effectiveness, an important performance characteristic in this study, is assessed experimentally.

Smith, Jr., Marion F. and John F. Scarry (Florida Bureau of Archaeological Research)

[52] A DISQUIETING SYNTHESIS OF APALACHEE FORT WALTON: MICRO-SCALES FOR MISSISSIPPIAN RESEARCH

We synthesize existing data on the Fort Walton Mississippian polity linked to the historic Apalachee. What is known has disturbing implications for the study of late prehistory at regional scales in eastern North America: notably, demographic trajectories varied vastly on a very small spatial scale, kilometers and not tens of kilometers, for areas believed to have been included within the polity. Regional research designs are more necessary than ever wherever this pattern of microtemporal and micropatial variation holds. How may they be optimized to meet the problems we have encountered?

Smith, Bruce D. (Smithsonian) [Discussant: 57]

Smith, George (National Park Service), Veletta Canouts (Smithsonian), Francis P. McNammon and Richard C. Waldhauser (National Park Service)

[63] THE CURRENT AND FUTURE ARCHAEOLOGICAL ASSISTANCE PROGRAM

Under the direction of the Departmental Consulting Archaeologist, the Archaeological Assistance Program provides leadership and coordination for Federal archaeological activities. Areas in which this program focuses are: information exchange, interagency coordination, technical publications, and regulations and guidelines. Special emphasis currently is being given to public awareness, training, and the National Archaeological Database.

Smith, M. T. (see Hally, D. J.) [11]

Smith, M. B. (see Kaplan, L.) [49]

Smith, S. (see Rippeteau, B.) [63]

Smyth, Michael.P. (New Mexico)


Research into maize storage behavior among the Puuc Maya has revealed that storage is closely interrelated with daily food processing activities. This information has enabled the development of a storage model based on spatial and activity scheduling at modern households. This organizational framework can be employed by archaeologists to interpret the material remains of storage behavior. Variability in storage techniques is also an important component that differentiates spatial usage at Puuc households. An understanding of how maize storage techniques condition space at the household level can provide archaeologists with valuable information for interpreting the materials associated with storage and other household activities.

Sneddon, L. A. (see Kaplan, L.) [49]

South, Stanley (South Carolina Institute of Archaeology & Anthropology)

[22] FROM THERMODYNAMICS TO A STATUS ARTIFACT MODEL

A step-by-step presentation of information from the energy-based dissipative structure concept of the laws of thermodynamics to a "Status Artifact Index Model," using sixteenth century Spanish colonial artifact and architecture data from Santa Elena, is presented. The model can be used to quantitatively measure, through artifacts, the socio-economic status level of domestic households represented by sixteenth century Spanish colonial artifact assemblages. It has been tested with data from Santa Elena, the sixteenth century capital of Spanish Florida. An example is presented of the integration of archaeological data at the site-specific, artifact-specific level with an energy theory framework useful in examining class structure and other culture processes reflected by the archaeological record.
Stanhish, Charles (Field Museum)

[6] DOMESTIC ARCHITECTURE AT PUKARA JULI, A LUPACA PERIOD SITE IN THE TITICACA BASIN

Domestic architecture can serve as one of the most sensitive indicators of ethnicity in the prehispanic south-central Andes. The potential of contextual methodologies based upon the household is discussed and the problem of site intrusion versus diffusionist models of cultural process is specifically addressed. Domestic architecture from the fortified hilltop site of Pukara Juli in the Lake Titicaca basin of Peru is used to illustrate this approach.

Stark, Barbara L. (Arizona State)

[29] MODELING CERAMIC PRODUCTION IN LA MIXTEQUILLA, CENTRAL VERACRUZ, MEXICO

Evidence from survey and surface collection over approximately 40 square kilometers documents varied ceramic production through a long prehistoric sequence. A marked degree of specialization is not evident until the Postclassic when cornal production appears to have been localized at a set of residences in one part of the survey area. A model of scattered specialized ceramic production as an adjunct to mixed household activities within a predominately agrarian economy is developed, applicable primarily to the Classic period. The general pattern is similar to that of the Maya lowlands and contrasts with highland urban patterns.

Stark, Barbara L. (Arizona State) [Discussant 35]

Stark, Barbara L. (Arizona State) [Discussant 4]

Stark, B. L. (see Hall, B. A.) [4]

Stark, Miriam (Arizona)

[31] THE REGIONAL EXCHANGE SYSTEM: AN ETHNOARCHAEOLOGICAL CASE STUDY

Ethnoarchaeological research in northern Luzon, Philippines, focuses on pottery manufacture and exchange. Tribal Kalinga potters have shifted in the last 15 years from a system of pottery production for household use to pottery production for widespread distribution. This study of the Kalinga ceramic exchange network addresses archaeological issues, documenting the geographical extent of the exchange system, the mechanisms of ceramic distribution, and the frequency and types of vessels that are distributed to settlements of varying distance. The Kalinga exchange network provides a useful case study for archaeologists interested in developing models of prehistoric ceramic exchange.

Steele, D. Gentry and Michael B. Waters (Texas A&M)

[55] OSTEOLOGICAL ANALYSIS OF HUMAN SKELETAL REMAINS ASSIGNED TO THE SULPHUR SPRINGS STAGE OF THE COCHISE CULTURE (CA. 8,200 - 10,400 B.P.)

Two Early Holocene skeletons recovered from the Sulphur Springs Stage of the Cochise Culture (8,200-10,400 B.P.) together, these represent the oldest human remains from the Southwest and are some of the oldest in North America. One, recovered by Sayles and Antevs, is an adult (25-55 years) female. Both skeletons indicate the existence of an early Southwest population which was small in stature, with individuals exhibiting dolichocephalic crania, winged and shovelled central incisors, shovelled lateral incisors, small molars, and platynemic femora.

Steele, D. G. (see Zimmerman, L.) [43]

Steele, D. G. (see Sobolik, K. D.) [67]

Stein, Gil (Smithsonian)

[46] SEGMENTARY STATE AND ORGANIZATIONAL VARIATION IN EARLY COMPLEX SOCIETIES: A RURAL PERSPECTIVE

The distinction suggested by ethnographers between “segmentary” and “unitary” states helps to clarify the range of variation in the political and economic organization of ancient complex societies. In these systems, the degree of economic specialization in village production can measure regional integration between centers and hinterlands. Faunal and other economic data from the mid-third millennium B.C. village of Gritille in southeast Turkey suggests a low level of economic integration apparently characteristic of segmentary states. Rural organization in these relatively primitive polities differs markedly from that of more complex, unitary states such as nearby Eblis in third millennium North Syria.
Stein, Julie K. (Washington) [7]

WHAT MAKES A SHELL MIDDEN?

Although shell middens are considered a "type of site," distinct from "lithic scatters," "kill sites," and "habitation sites," the only attribute that all shell middens have in common is the presence of shell. Portions of shell middens could be lithic scatters, kill sites, or habitation sites. Therefore, to discuss shell middens in a global sense, one has to focus on the only attribute that all shell middens share—the shell. Interpretations of shell involve its species, season of death, preferred habitat during life, mode of death, deposition, and post-depositional alterations. These are taphonomic characteristics, involving the passage of organisms with shell from the biosphere to the lithosphere. Thus, the only unifying aspect of all research on shell middens is the taphonomy of the shell.

Steinert, Karl T. (West Georgia) [76]

A REEVALUATION OF WILLIAM H. SEARS' EXCAVATIONS AT THE ETOWAH MOUNDS, 1953

In 1953, William H. Sears excavated an extensive series of test units in the village area of the Etowah site. These were designed to determine the stratigraphy of the site as well as gather information on ceramic sequences, house structures and other cultural variables. These data have, to date, received little attention by archaeologists working in the Southeast. This paper is the reexamination of Sears' data in an effort to discern aspects of the cultural occupation of the Etowah village area. Questions of ceramic distributions are addressed as are aspects of the use of various locations in the village area of the site during time.

Stepanakis, V. P. (see Preziano, S. C.) [68]

Stewart, Michael (Louis Berger and Associates, Inc.) [19]

PREHISTORIC EXCHANGE ACROSS THE ARCHAIAC-WOODLAND INTERFACE IN THE MIDDLE ATLANTIC REGION

The Early Woodland period is characterized by a decline relative to the preceding Terminal Archaic in the volume, but not the geographical extent, of chipped stone artifacts made from materials that occur within the region and which circulated through both broad-based and focused types of exchange networks. In contrast, the incidence of artifacts made from materials originating outside of the region slowly increased through the Early Woodland period in comparison with the levels documented for the Terminal Archaic period. The implications that these changes have for traditional views of these periods are discussed.

Stewart, M. (see Custer, J.) [64]

Stine, Mary C. (New Mexico) [47]

MORTALITY PATTERNS AS INDICATORS OF UPPER PLEISTOCENE HUMAN PREDATOR NICHES: A COMPARATIVE PERSPECTIVE

A comparative perspective on the prey selection habits of predators and other causes of death in prey populations is needed to interpret archaeological mortality patterns. This paper examines the range of variation in age prey selection among modern predators relative to other natural mortality phenomena and defines a prey age variable that is useful for distinguishing modern predator niches. Some prehistoric human-generated mortality patterns from Upper Pleistocene Italy and Holocene North America are then compared within this framework. In all cases, humans/hominids behaved as ambush predators or scavengers. Significant temporal variation in habitual prey selection and, by implication, the relative emphasis of access methods corresponds to climatic deterioration of the last glacial but may predate the Middle/Upper Paleolithic transition as defined from tool industries.

Stone, Doris (Tulane e Peabody Museum) [Discussant 75]

Stone, J. (see DeFrance, A. S.) [48]

Storch, Peter L. (Royal Ontario Museum) and John Tomenchuk (Center for the Study of Early Man) [64]

THE FUNCTION AND SIGNIFICANCE OF AN EARLY PALEOINDIAN CTRACE OF INFORMAL TOOLS AT THE UDORA SITE, ONTARIO

The results of a parametric use-wear analysis of a cache of tools presumed to have been deposited by Gainey Complex peoples are presented. Forty of the 79 informal tools are suited for parametric analysis. The results indicate that all 40 were used in a seasonally specific task, possibly the processing of tree roots, and perhaps by three female individuals. This suggests that the individuals who deposited the cache anticipated visiting the site or vicinity during the same season in the future, an activity that has important implications for patterns of land use.

Stothers, David M. and Timothy J. Abel (Toledo) [19]

LATE ARCHAIAC-EARLY WOODLAND BAND SOCIETIES AND THE WILLIAMS MORTUARY COMPLEX OF THE WESTERN LAKE ERIE REGION

Cultural continuity suggested for Late Archaic Feechley (2,500-600 B.C.) and Early Woodland Leinbach (600 B.C. - 1 A.D.) phases in the Western Lake Erie region is reflected in settlement-subsistence, mortuary, trade and exchange systems, and artifact assemblages. Evidence from independent drainage systems suggests that local microband configurations were interconnected through a regional macroband center consisting of the associated Williams Cemetery and Siedeet Cremeray sites. It is also suggested that several elite information and commodity controlling linkages focused regional trade and exchange and its associated mortuary ceremonialism at this center, which was linked to other large and distant regional centers throughout the Eastern Woodlands.

Stothert, Karen E. (Museo Anthropologico del Banco Central del Ecuador) [Discussant 73]

Stright, Melanie J. (Mineral Management Service) [Discussant 50]

Stuart, David (Princeton) [11]

THOUGHTS ON TERRITORIAL ORGANIZATION WITHIN CLASSIC MAYA STATES

Hiegralographic inscriptions from the western Maya lowlands often mention a class or office of nobles who ruled small satellite sites within large polities. The apparent rise of these ruling subsidiaries in the Late Classic period (A.D. 650-800) may have helped to define the territorial domains of the large western polities centered on Palenque, Yaxchilan, Piedras Negras, and other sites. This phenomenon seems to have been restricted to the western lowlands and perhaps areas of present-day Campeche, and might suggest some degree of variation in the internal organization of ancient Maya states.

Sugiyama, S. (see Cowgill, G. L.) [69]

Sullivan, Alan (Cincinnati) and Christian E. Downum (Cincinnati) [12]

REGIONAL IMPLICATIONS OF WUPATKI SETTLEMENT PATTERNS

A total of 3,597 prehistoric sites were recorded during the intensive inventory of Wupatki National Monument. Analytical results of data collected during the survey are discussed as they pertain to: 1) the occupational history of the monument, 2) spatial and temporal distributions of site types, 3) variation in site size, and its relative significance through time, and 4) "cultural variation" through time. With this information, new models of land-use, rates of site establishment, and population levels are presented. These new models and estimates provide a framework for discussing regional settlement dynamics and adaptive strategies in the Flagstaff, Grand Canyon, and Black Mesa areas between A.D. 1070 and A.D. 1270.

Sullivan, Lynne P. (New York State Museum) [36]

HOUSEHOLD AND COMMUNITY ORGANIZATION OF THE MOUSE CREEK PHASE

The composition of Mouse Creek phase domestic facilities and their spatial arrangements within settlements provide data for interpreting household and community organization of this Late Mississippian society. Comparisons with early historic and other late prehistoric complexes in the Upper Tennessee Valley suggest changes in regional socio-political organization. The developmental trend can be characterized as a shift from politically centralized chieftain societies to relatively nonhierarchical tribal societies.

Sullivan, L. P. (see Neusius, P.) [88]

Sutliff, Mary Jo (Cincinnati) [73]

DOMESTIC PRODUCTION OF SMALL COPPER ARTIFACTS DURING THE MILAGRO CULTURE OCCUPATION AT PENON DEL RIO (GUAYAS BASIN)

Small copper artifacts from domestic contexts of the Milagro Culture occupation at Penon del Rio indicate that some metallurgical production occurred at the household level. While the sample recovered includes a high variability of end-products, many of these appear to have been fabricated from two essential "blanks," classified here as square wire and strips. An integrated production system is proposed which is argued to have allowed more artisans to practice metallurgy by obtaining these preforms through trade. The importance of a general model which reconstructs the metal-working process is emphasized for purposes of identifying archaeological contexts where this activity took place.
Sutter, L. L. (see Martin, P. E.) [76]

Sutton, Mark Q. (California State-Bakersfield)

PREHISTORIC DIETARY PREFERENCES IN THE SALTON BASIN, CALIFORNIA
An analysis of faunal and floral remains recovered in coprolites from several sites in the Salton Basin, California, reveals several patterns of resource preference and utilization. Specifically, the distribution of fish elements throughout the sample suggests that certain parts were being eaten in conjunction with other plants and animals, thus illustrating dietary preferences and utilization patterns during late prehistoric times.

Swain, Charles P. (1.), Patrick E. McEstruther and Stuart J. Fleming (MASCA-Pennsylvania)

CHARACTERIZATION OF ANCIENT MATERIALS USING PIXIE SPECTROMETRY
This paper describes the general physical processes of proton induced x-ray emission (PIXE) spectrometry that underlie its advantages as an analytical tool in the study of ancient materials, and reviews the practical limitations met in the routine determination of some elements in certain matrices [e.g., cobalt in a bronze, and tin in a leaded glass]. A summary of applications of the technique will include 1) a study of the quality of iron-making in post-Revolution U.S., 2) a new look at colorants used in 18th Dynasty Egyptian glassmaking, and 3) an assessment of the origins of raw materials in making Sumerian bronzes.

Sweetey, William R., Eugenia J. Robinson and Castulo Pac Raxon (CIRMA)

ARCHAEOLOGICAL SURVEY OF THE SOUTHEAST CAXICHIQUEL SPEAKING REGION
In April 1988 CIRMA (Centro de Investigaciones Regionales de Mesoamerica) began an archaeological survey of the Caxichiule speaking region. Investigations in the Department of Sactepec has located over 100 sites which span the Middle Preclassic through Colomian eras. This paper reviews the results of the survey and evaluates existing hypotheses concerning settlement patterns in the southeastern portion of the Caxichiule region.

Tankersley, Kenneth B. (Glenn A. Black Laboratory-Indiana)

WENT TO RATHER BE HERE THAN OUT ON THE TUNDRA
Over the past 60 years two dominant and competing models of early Paleolithic economy in the Midwestern United States have emerged—labor-intensive hunting and generalized foraging. Both models are predicated upon assumptions about optimal foraging behavior; the antiquity of humans in the Midwest, paleoecological reconstructions, the behavior of large migratory herbivores in complex environmental settings, and the temporal placement of their extinction. These assumptions are evaluated by identifying patterns in lithic exploitation and human settlement. This evaluation demonstrates that the early Paleolithic economy of the Midwest was specialized hunting, but in conjunction with foraging activities.

Taschek, J. T. (see Ball, J. W.) [11]

Tay, Anne Pike (New York)

CHANGES IN SEASONAL EXPLOITATION OF RED DEER IN THE UPPER PALEOLITHIC OF SOUTHWEST FRANCE
During intervals of climatic amelioration from 33,000 to 10,000 B.P. in the Aquitaine Basin of southwestern France, red deer was the main prey of the late Pleistocene hunter. Determination of season of death through cementum annulus analysis and construction of age profiles of the red deer were combined with existing data from reindeer and fish exploitation from seven early and final Upper Paleolithic sites. The results suggest clear differences in hunting strategies employed during the two periods. These contrasting strategies imply change in the social organization of the hunters as well as an adaptive response to the changing conditions of the terminal Pleistocene environment.

Taylor, R. L. (see Schalk, R.) [70]

Teltser, Patrice (Southern Illinois-Carbondale)

ARCHAEOLOGY AND THE HISTORICAL SCIENCES
Facing apparent failure to create a nonphilosophic science, archaeologists remain committed to a research program rife with inconsistencies. Relying on explanatory models borrowed from other sciences is inconsistent with building archaeological theory. Nevertheless, it is ironic that discussions of historical sciences, particularly the concepts that enable them to effectively explain change, have been poorly received. Yet, by examining the theoretical underpinnings and methodological implications of historical sciences, archaeologists can begin to unravel many inconsistencies impeding the realization of their goals. What emerges however, is not a set of answers to our questions, but an entirely new set of questions.

Tomka, Steve A.

Terrell, John and Robert L. Welsh (Field Museum)

TRADE NETWORKS, AREAL INTEGRATION AND DIVERSITY ALONG THE NORTH COAST OF NEW GUINEA
The North Coast is noted for its artistic and ritual traditions, trade networks, craft specializations, and extreme cultural and ethnolinguistic differentiation. Both Papuan-speaking and Austronesian-speaking communities share a similar level and kind of cultural development distinct from neighboring areas, most markedly from Papuan groups in the hinterland. Field Museum holds the largest, best documented ethnological collection from Melanesia in the United States. We are analyzing the role of material culture in shaping and maintaining social, economic, and ritual patterns of similarity and difference to evaluate hypotheses (such as F. Teichel's) about areal integration and how variation in material culture is related to social, ecological, and other contexts.

Tursk, J. M. (see Hyland, D.) [39]

Thomas, David Hurst (American Museum of Natural History)

MISSIONS OF THE SPANISH BORDERLANDS: A TRANS-CONTINENTAL REFLECTION
Although the missions of La Florida were constructed according to a Spanish master plan for the New World, they differed in varying degrees from missions established in the western Borderlands. The 16th and 17th century missions of Spanish Florida are compared with their counterparts in the Californias, the American Southwest, Texas, and northern Mexico using both archaeological and documentary evidence. We emphasize the various strategic objectives, the differential responses of the Native American "mestizos" involved, and the relative degree to which missions were judged successful in each area.

Thomas, David Hurst (American Museum of Natural History) [Discussant 41]

Thompson, R. G. (see Mather, D. J.) [21]

Thorpe, Robert M. (Center for Archaeological Research-Mississippi)

PREHISTORY OF THE SOUTHEASTERN UNITED STATES: A SYNTHESIS OF PERSPECTIVES
The middle tone is one of great diversity and complexity, evidence for which is seen in the rich archaeological record of the Southeastern United States. This paper presents a synthesis of perspectives that have emerged from archaeological research in the Southeast.

Tillyer, Alice C. (Texas-Houston)

SIGNS AND SYMBOLS OF PRECLASSIC NICAYA
Presented here is a discussion of recurring iconographic symbols in Late Preclassic Nicoya and Chorrera pottery that reinterprets the theoretical proposition of interaction among early Pacific Coast cultures. These iconographic resemblances are examined and the evidence for contact between the two regions is discussed.

Todd, Lawrence C. (Boston)

SEASONALITY STUDIES AND PALEOINDIAN SUBSISTENCE STRATEGIES
The growing body of data on eruption, duration, and crown height of bison lower dentitions from Paleolithic bonebeds provides a substantial basis for the examination of seasonal trends in the use of large game animals by late Pleistocene/early Holocene human groups in western North America. While there is a definite pattern of winter mortality, other lines of evidence indicate minimal processing of the carcasses. Procurement of food resources for storage does not seem to have been a primary concern. This suggests that mass-kill hunting sites may have played a different role in Paleolithic systems than in those of later bison-hunting groups where mass kills were a key component of over-wintering strategies.

Todd, L. C. (see Hofman, J. L.) [40]

Todd, L. C. (see Rapson, D. J.) [41]

Tomochuk, J. (see Storck, P. L.) [64]

Tomka, Steve A. (Texas)

THE ETHNOARCHEOLOGY OF SITE ABANDONMENT IN AN AGRO-PASTORAL CONTEXT
Site abandonment behavior with anticipated return is discussed in a land use pattern consisting of three village segment types: main, pastoral and agricultural. The following categories are distinguished: seasonal, intermittent and permanent. The segments in these abandonment categories are discussed in terms of: 1) assemblage size, 2) assemblage integrity, 3) cache formation processes, and 4) artifact
quality. Both indoor and outdoor activity area patterns are considered. The effect of abandonment length in conjunction with recycling and scavenging are considered as major factors explaining assemblage content.

Tomka, S. A. (see Mauldin, R. J.) [8]

Toplyn, M. R. (see Meadow, R. H. J.) [30]

Torrence, Corbett McP. and Patricia H. Baker (Maine-Farmington)
[77] ARCHAEOLOGICAL INVESTIGATIONS CONDUCTED IN THE RICHARDSON LAKES REGION OF INTERIOR MAINE

The results of phase I and II investigations conducted in the Richardson Lakes region of northwestern interior Maine are described. These lakes are situated in the mountainous upper portion of the Androscoggin River drainage system. The significance of this region lies in the fact that it includes both riverine and lacustrine settings occupied and utilized by aboriginal populations. Twelve previously recorded sites were visited and 12 new sites were recorded during the current investigations. These data indicate that the area has been inhabited from the Archaic through the Contact periods.

Tosi, Maurizio (SeeEO)
[72] TYPES OF SETTLEMENTS AND ECONOMY OF ARABIA IN MIDDLE HOLOCENE TIMES

Between 5,000 and 3,000 B.C. the material foundations of the Bronze Age civilizations of eastern Arabia emerged as a strong regional adaptation. A critical aspect for future developments is perceptible in the ranking of settlements by qualitative discriminants: activity centers, burial grounds, and monument. Star structures are here discussed in their capacity to define functional variability. A model for the ranking of settlement, also discriminating seasonal patterns of territorial occupation, is proposed from ethnographic work on hunting-gathering societies.

Toutellot, Gair (Dumbarton Oaks)
[4] MEASURES OF HOUSEHOLD DIFFERENTIATION AT SEIJAL

Ancient Maya households can be analyzed and ranked on multiple measurement scales. Excavations data from a large sample of Terminal Classic ordinary households at Seijal will be used to differentiate both within and between households on several arguably social dimensions. The more measurement scales employed, however, the less the consistency of results. Reasons for lack of consistency may lie in formation processes, truncated samples, and research design as much as ancient social mobility.

Tringham, Ruth (UC-Berkeley)
[18] HOUSEHOLDS WITH FACES: THE PROBLEM OF GENDER IN THE PREHISTORIC ARCHITECTURAL RECORD

The value of studying prehistoric socio-cultural change at a microscopic level is emphasized using the household as the primary unit of analysis. The absence of architectural remains and related material culture in the archaeological record to verify, refute and validate hypotheses about household cooperative action is discussed with specific examples from Southeast European archaeology. The paper will end with a discussion on the willingness (or not) of archaeologists to give faces (and, therefore gender) to their theoretical/imagined households.

Trostel, Brian (Arizona)
[31] INTRAVILLAGE CERAMIC PATTERNING: AN ECONOMIC PERSPECTIVE

In order to better understand intravillage ceramic patterning, a portion of the ceramic data collected by the Kalinga Ethnoarchaeological Project is analyzed from an economic perspective at the household level. Relative household wealth is computed for all households in Dangtalang, Palis, Kalinga-Apayao. Correlations are explored between household wealth and several variables, including the number of ceramic vessels in each household, the percentage of ceramic versus non-ceramic introduced vessels within each household, and individual household pottery production rates. Relationships between ceramic patterning and economic differentiation at the household level, and possible archaeological implications, are discussed.

Tuffreau, Alain (Centre d’Etudes et de Recherches Prehistoriques)
[2] MIDDLE PALEOLITHIC SETTLEMENT IN NORTHERN FRANCE

Recent excavations have provided important new data on the patterns of Middle Paleolithic settlement in northern France. In several sites there is evidence for clearly defined spatial patterns, characterized by varying distributions of fauna, debitage, tools, nodules, etc. In many cases the correct identification of the industries in typological terms requires the exposure of large areas. Clear relationships exist between climatic conditions and Middle Paleolithic occupation in Northern France. Deposits formed

under extreme periglacial conditions appear to lack evidence for occupation. It appears therefore that the occupation of the north-west European Plain by Neanderthal groups was not continuous.

Turano, Frank (SUNY-Stony Brook)
[68] THE LONG ISLAND ENVIRONMENT: AN EXAMPLE OF CONTACT PERIOD ENVIRONMENTAL RECONSTRUCTION AND EXPLOITATION

Three hundred years of settlement and land use along the Atlantic Coastal Plain have limited understanding of contact period environmental conditions. Field research coupled with multi-disciplinary resources that encompass literature, historic documents, illustrations and maps, as well as geographical, ecological, and early natural history reports, can provide unified insight into contact period habitats. These sources are used to develop a habitat distribution model for Long Island, New York, at the onset of European settlement. The model provides a basis for understanding the pattern of European settlement and resource exploitation while recognizing the role of Native Americans in habitat alteration.

Urban, P. A. (see Schortman, E. M.) [79]

Urban, P. A. (see Miller, J.) [56]

Van Buren, M. (see Rice, P. M.) [6]

Van Horn, David (Archaeological Associates, Ltd.)
[47] MECHANIZED ARCHAEOLOGY

The author’s recent book, *Mechanized Archaeology*, and other published and unpublished papers, form the basis of a discussion of applications for skid steer loaders in test and salvage archaeology. In test work, skid steer loaders may be equipped with attachable backhoe and auger units. In salvage work, the same machine can imitate hand digging in arbitrary levels. It can then be used to transport the debris to a large-scale hydraulic screening station for processing. This system is up to ten times more efficient than conventional techniques.

VanDiver, Pamela (Smithsonian), Martin Oliva (Antropos Institute) and Olga Soffer (Illinois)
[94] THE MANUFACTURE AND USE OF A PALEOLITHIC FEMALE FIGURINE FROM DOLNI VESTONICE, CZECHOSLOVAKIA

A description and analysis of the female figurine, known as the Dolni Vestionice Venus dated to ca. 25,000 B.C., was carried out to characterize the technology of fabrication and firing and to attempt to understand some details of the use of the figurine. The technology of the figurine is related to the rest of the corpus of animal figurine and other ceramic fragments from Dolni Vestionice, reported at last year’s SAA meetings. Analyses of replicative studies using clay-bearing loess soils of the same composition and mineralogy from Dolni Vestionice II serve as standards. The limits of interpretation of objects from materials analysis are explored.

Varlen, M. (see Lipe, W.) [12]

Vasquez, Ricardo ()
[62] DEMOGRAPHIC PROFILE OF A LATE PRECONTACT POPULATION OF THE CENTRAL HIGHLANDS OF COSTA RICA

Between 1982 and 1998 rescue archaeology was conducted at the Aguacaliente site in the central highlands of Costa Rica. The occupation of this site began around 300 B.C. The peak of its population was from A.D. 800 to 1550. Twenty-five different groups of tombs of this period have been excavated. Physical analysis of 184 individuals sheds light on the demographic characteristics of the population.

Vicente-Garcia, Juan (Centro de Estudios Historicos-Madrid)
[97] SOCIAL AND ECONOMIC CHANGE IN FOURTH MILLENIUM IBERIA

Economies developed in the Iberian Peninsula during the fourth millenium B.C., from systems which combined "Neolithic" features with those of developed hunter-gatherers, which already had the principal features of the modern Mediterranean agrarian landscape. The archaeological record for this period is highly deficient, however. It is only by taking into account the negative as well as the positive evidence for economic and social change that we can understand this evolutionary process.

Vidale, Massimo (Smithsonian)
[10] THE IDENTIFICATION OF CRAFT PRODUCTION IN EARLY URBAN SOCIETIES AND THE CULTURALLY SPECIFIC DEFINITION OF PUBLIC SPACE

Craft specialization, as expressed in functionally segregated areas within settlements, has been summarily studied as a key variable for understanding early state societies. Nonetheless, few attempts have been made to evaluate categories like "workshop" or "atelier." These refer to specific historical
contexts, far from the reality of surveys and excavations, and only partially reflect the set of processes patterning the archaeological record. Production units in early cities can be seen as three-dimensional discrete spaces disposing of disciplines. One outside, industrial trash interferences with public space, and is subject to different cultural rules. A contemporary steatite-working industry in Pakistan is contrasted with steatite production at the Harappan city Moenjodaro, showing how two similarly specialized urban industries may result in opposite "archaeological" outputs.

Vidale, M. (see Ehrenreich, R. M.)[34]

Villa, Paola (Colorado Museum) and Eric Mahieu (Marseille)

[66] TAPHONOMY AND FRENCH ARCHAEOLOGY

Interest in taphonomic analyses is rapidly growing among French prehistorians and developments in methodology are expected. The meticulous recovery techniques used by French excavators favor a research strategy based on the use of spatial and contextual data as an alternative or a complement to actualistic approaches. As an example, we present a study of human collective burial and refuse pits at Fontbrégoua Cave. The purpose of this study is to test criteria for distinguishing breakage due to sediment pressure of dry bones from marrow fracturing of fresh, cannibalized bones.

Villanueva, Jose Lorde R. (Philippines)

[31] KALINGA RICE TERRACES

Agricultural terracing develops in four phases: initial terrace formation, expansion, discontinuance, and abandonment. Initial terracing is done by individual households. Terrace expansion highlights the construction of irrigation works by household groups, intervillage cooperation, development of terrace tools from hard wood to iron, institution of regulatory measures on water rights and distribution, clustering of terraces gradually undertaken by the decending generations, and the eventual demise of rice swiddening. Terrace construction discontinues as available water sources are exhausted. Permanent abandonment is caused by erosion lowering the creek floor thereby obstructing the channel to the irrigation canal.

Vogel, J. C. (see Busman, G. B.).[67]

Voigt, Mary (University Museum-Pennsylvania) [Discussant 59]

Voorens, Barbara and George H. Michaels (UC-Santa Barbara)


The formation processes of a group of shell middens located within an estuary on the Pacific Coast of Chiapas, Mexico are examined. The middens are sizable accumulations of a single bivalve (Neocrassostrea ordinaris Prion), a marsh clam that is found in shallow lagoons in the vicinity of the sites. Radiocarbon age determinations place the age of the sites during the third millennium B.C., within the late Archaic Period of the general Mesoamerican chronology. Thus far, these sites are the earliest known from the coastal plain of Chiapas. We conclude that the sites were used periodically on the basis of 1) stratigraphy, 2) artifact assemblages, 3) experiments on cooking and firing clams, and 4) studies of growth rings of archaeological and modern clams.

Vrabl, Deborah (Federal Energy Regulatory Commission) [Discussant 45]

Wagner, D. (see Moseley, M.).[50]

Wagner, Gail E. (Center for American Archaeology)

[37] MISSIONARIAN FARMERS OF THE CENTRAL OHIO VALLEY

Paleoethnobotanical interpretations of archaeological remains draw upon techniques and information from other fields and disciplines. Thus, it can provide new viewpoints for directing problem-oriented research. An analysis of the plant remains from late prehistoric groups in the central Ohio Valley is combined with human skeletal, faunal, biochemical, environmental, settlement, and material culture analyses to reveal implications for diet, nutrition and health, social organization, policy decision making, and contact and exchange. Although a case study approach is used, this type of interdisciplinary paleoethnobotanical research is shown to be profitably applicable to a variety of archaeological settings.

Wagner, Mark and Mary R. McCorkie (American Resources Group, Ltd.)

[54] THE "OLD LANDMARK": AN EARLY TO MID-NINETEENTH CENTURY TAVERN ALONG THE SAINT LOUIS-VINCENNES TRACE

During the early nineteenth century the St. Louis-Vincennes Trace connected St. Louis Missouri with the eastern United States. Site 11MR84 in Illinois represents an early tavern along that trace. Samuel Young, a Revolutionary War veteran whose name appears on an 1819 list of "curthrons and

Watson, P. J.

murderers," lived at the site from 1813-1819. From 1826-1846 Benjamin "Blackbear" Vermillion operated a tavern and stagecoach stop known as the "Old Landmark" at the site. Recent archaeological investigations at 11MR84 uncovered subsurface features including foundation remnants, cellars, and pits containing materials associated with both Young and Vermillion.

Wake, Thomas and Justin Hyland (UC-Berkeley)

[35] EARLY FORMATIVE FLORA, FAUNA, AND ESTUARIAN SUBSISTENCE SYSTEMS IN SOUTH COASTAL GUATEMALA

Excellent recovery of flora and fauna from the sites of La Blanca, Department of San Marcos, and of El Mesak, Department of Retaldefue has provided a new, more detailed view of Early and Middle Formative subsistence systems. The human exploitation of fauna and flora from 1,400 to 700 B.C. is described in this region. This evidence is then used to discuss the broader nature of coastal economies and their evolution in the Formative era.

Waldbauer, R. C. (see Smith, G.).[63]

Walker, P. L. (see Larson, D. O.).[37]

Wallers, Gary (Triad Research)


The ultimate goals of the Maya Ceremonial Caves Project are to define the various types of Maya ceremonial caves use in the Toledo District of Southern Belize and to relate them to surface sites manifested in the region. These goals will be accomplished by 1) implementing an extensive, long-term settlement pattern survey and surface collection program to locate cave sites and determine their approximate temporal placement; and 2) undertaking a series of intensive, short-term, site-specific mapping, surface collection and excavation programs to clarify, quantify, and elaborate on previously known and collected data within this area. Findings of the 1988 and 1989 field seasons are discussed.

Wagner, P. (see Hesse, B.).[15]

Woolf, G. A. (see Sheldon, C. T.).[76]

Woslewskaya, Ewa (Utah)

[7] ARCHAEOLOGY OF RELIGION: COLORS AS SYMBOLIC MARKERS DIVIDING SACRED FROM PROFANE

Religious interpretations based on archaeological recovered material from preliterate societies are often a subjective endeavor. Religion, as an important aspect of human activity and behavior, can be considered in scientific terms when it is approached from a proper, cross-cultural theoretical perspective. A theoretical framework is presented by which the religious data of prehistoric societies, especially of Early Bronze Age Anatolia, can be distinguished, analyzed and interpreted. The importance of colors as signs and symbols of different religions, and their usefulness for archaeological interpretations, is discussed.

Waters, Michael R. (Texas A & M) and Anne I. Wooldridge (Amend Foundation, Inc.)

[40] A GEOARCHAEOLOGICAL REEVALUATION OF EARLY COCHISE CULTURE ARTIFACT ASSOCIATIONS WITH PLEISTOCENE LAKE COCHISE, ARIZONA

GEOARCHAEOLOGICAL investigations of the lacustrine stratigraphy and geochronology of Pluvial Lake Cochise in southeastern Arizona, show that high stands occurred from 13,750 to 18,400 B.P., once during the early Holocene around 8,900 B.P., and twice during the middle Holocene. Ground stone artifacts of the Sulphur Spring stage of the Cochise Culture, previously reported to be temporally associated with the late Pleistocene high stand of Lake Cochise, are shown to have come from Late Holocene non-lacustrine colluvial sediments. These findings fail to confirm the view that the Sulphur Spring stage was contemporaneous with the Clovis complex. Instead, the Sulphur Spring stage represents the oldest Cochise occupation in the American Southwest, radiocarbon dated between 10,000 and 8,000 B.P.

Waters, M. R. (see Steele, D. G.).[55]

Watson, Peggy Jo (Washington-St. Louis)

[28] OPEN COMMENTS ABOUT ARCHAEOLOGICAL ISSUES CONFRONTING THE 1990'S

Watson, P. J. (see Kennedy, M.).[18]
Wattenmaker, Patricia (Smithsonian)

[44] POLITICAL CENTRALIZATION AND THE REORGANIZATION OF RURAL PRODUCTION

The relationship between political centralization and increasing specialization of the economy is examined through a study of household economic reorganization at the site of Kurban Hoyuk, on the Turkish Euphrates. During the third millennium B.C., Kurban grew from a small village-sized site to a more diversified small town, coincident with regional political centralization. Third millennium B.C. residential structures were excavated to determine the degree of economic specialization at a hinterland site of an early state system. Results of the artifact analyses reveal increasing economic specialization on the non-elite household level as the state society developed. The findings are used to evaluate explanations for increasing specialization of the economy in early state societies.

Watters, David R. (Carnegie Museum of Natural History) and James B. Petersen (Maine-Farmington)

[52] THE FOUNTAIN CAVERN CEREMONIAL SITE, ANGUILLA, WEST INDIES

Archaeological survey and testing, carried out with the Anguilla Archaeological and Historical Society in January 1986, identified 12 well-preserved petroglyphs in Chamber 1, the front part of Fountain Cavern. Two radiocarbon dates (on shell) and analysis of excavated ceramics (29 vessels identified) indicate major use occurred after A.D. 500, during the post-Saladoan era. Attribution of Fountain Cavern to the post-Saladoan is in accord with evidence from open sites that indicate major occupation occurred later on Anguilla than on the islands in the northern Lesser Antilles. Fountain Cavern is interpreted as a ceremonial site used primarily during the post-Saladoan period.

Watters, D. R. (see Donahu, J.)(50)

Weber, David J. (Southern Methodist)

[44] BLOOD OF MARTYRS, BLOOD OF INDIANS: TOWARD A MORE BALANCED VIEW OF SPANISH MISSIONS IN SEVENTEENTH CENTURY NORTH AMERICA

Franciscan missionaries achieved remarkable progress in planting mission communities in southeastern and southwestern America in the seventeenth century. The classic historical accounts explain this rapid missionary expansion largely from the perspective of the missionaries themselves, crediting them with improving the lot of benighted natives and imagining the mission as an example of “Spain’s frontiering genius.” In the last few decades, historians and anthropologists have challenged that classic construction. They have taken a more balanced view, seeing natives as determining the outcome of Franciscan initiatives and the missions themselves as failures in many respects.

Weber, Steven (Pennsylvania)

[10] ACCOUNTING FOR VARIABILITY IN THE TEMPORAL AND SPATIAL DISTRIBUTION AND OCCURRENCES OF PLANT REMAINS IN SOUTH ASIA SITES DURING THE SECOND AND THIRD MILLENNIUM B.C.

The limited archaeobotanical record presently available for South Asia between 2,000 and 4,000 B.C., displays a tremendous amount of temporal and spatial variability. This variability has been attributed to the evolution of region-wide subsistence systems, influence from areas outside South Asia, differing plant-use strategies amongst local populations, and bias in sampling or methods of analysis. South Asian archaeobotanical variability is evaluated in the light of new data, and further suggestions for its interpretation are offered.

Webster, David L. (Pennsylvania State) (Disc. 11)

Webster, D. L. (see Sanders, W. T.) (57)

Webster, Gary (Pennsylvania State)

[34] ELITE MAJORITYS AND THE EMERGENCE OF STRATIFICATION IN PREHISTORIC EUROPE

Prevailing theories on the emergence of social stratification in Bronze Age Europe (e.g., craft specialization/wealth, subsistence/redistribution, social storage and entrepreneurial models), it is argued, are deficient in defining the conditions under which differential control of resources (subsistence, labor, technology) was initially established by an emergent elite. An alternate “elitist-majority” model is offered which generates stratification from the structured patron-client relationships resulting from residential shifts within a circumscribed, high risk environmental setting. Implications of the model are discussed with reference to Mediterranean and Temperate European archaeological records.

Whelan, Mary, Randall Withrow and Barbara H. O’Connell (65)

Wedel, D. L. (see Kornfeld, L.) (54)

Weisler, Marshall (Washington)

[74] TOWARDS DOCUMENTING TRADE AND EXCHANGE IN A COMPLEX CHIEFDOM: AN ESSAY IN METHOD

The spatial and temporal distribution of exotic resources within Polynesian chiefdoms has attracted much recent interest amongst archaeologists analyzing trade and exchange and associated socio-political change. To date, no systematic surveys have been undertaken in Hawai‘i expressly for the purpose of finding sources of fine-grained basalt for adze manufacture. A geologic model is presented for locating sources of adze-quality basalt on west Moloka‘i, Hana‘i, and an evaluation of the merits of petrographic and chemical characterization of source material is given. The implications for trade and exchange studies of complex societies are discussed.

Weiss, Andrew D. (MASCA-Pennsylvania)

[39] ON THE EDGE OF CASM: COMPUTER ASSISTED SURVEYING AND MAPPING IN THE FIELD

Computer-Assisted Surveying and Mapping (CASM), integrating electronic surveying instruments, field data recorders, and microcomputer graphics, can dramatically increase the speed, accuracy, and cost-effectiveness of archaeological spatial data recovery. This paper covers the components and procedures involved in using CASM, along with a review of current applications. The Computer Mapping Program for Archaeological Sites and Survey (COMPASS), a CASM system implemented on the Apple Macintosh, will be described in depth, along with its applications in [1] topographic mapping and systematic surface collection in Thailand, and 2] architectural mapping at a second millennium B.C. mound in Syria.

Weiss, A. D. (see Claris, R.) (3)

Weiss, K. M. (see Wood, J.) (57)

Welch, John R. (Arizona State University)

[53] ARCHEOLOGY AT THE FENSTER SCHOOL OF SOUTHERN ARIZONA: A REEVALUATION OF THE SABINO CANYON RUIN AND COMMENTS ON 60 YEARS OF PRECOLLEGIATE EDUCATIONAL PROGRESS

Three generations of contributions to the prehistory of Southern Arizona by the Fenster and Southern Arizona Schools are summarized. Excavations since the 1920’s have focused on the Sabino Canyon Ruin (AZ BB 9:32 [ASM]), a Tazpan Verde Phase (A.D. 1100-1300) Hohokam site featuring at least four walled compounds. The results of recent resurveys and archival research provide new data for reconstructing the late prehistory of the eastern Tucson Basin. Archaeology has been successfully blended with the Fenster educational experience. Field, laboratory, and classroom programs are being expanded and informed by archaeological research. Much of the work of the Fenster is being replicated in secondary school archaeological instruction is solicited.

Welsh, Peter S. (Minnesota)

[88] CHANGING ATTITUDES TOWARD OBJECTS IN LATE PREHISTORIC EUROPE

Centers of manufacturing characterize the growing economic and social complexity of the terminal millennium B.C. in Europe. Just before the historical era, around 100 B.C., a profound change took place in the nature of manufacturing. Before that time, workshops produced mostly objects intended for symbolic purposes—to communicate information about status and affiliation. After 100 B.C., centers of manufacturing manufactured large quantities of iron tools to serve a wide range of economic purposes, and few goods of primarily symbolic significance. Changes in burial practices further demonstrate a major shift in Europeans’ attitudes toward manufactured objects.

Wieczorek, R. L. (see Terry, L.) (74)

Whelan, Mary (Iowa), Randall Withrow (Minnesota) and Barbara H. O’Connell (Hamilite)


The Black Dog Burial Site, 21DK26, is an Eastern Dakota Indian burial site dating to the 1840's. It is located on a sandy river terrace above the Minnesota River, roughly seven miles south of St. Paul. Thirty-nine individuals were interred in 25 different burials with a wide variety of artifacts including beads, fire-steel, broaches, knives, and scissors. Preliminary analysis reveals clear evidence of the abandonment of non-native Dakota items and customs. Archaeological, osteological and ethnological evidence indicates considerable variation in burial mode, continued use of aerial scaffolds.
prior to interment, minimal Christian influence, and significant Dakota modification, substitution and transformation of non-indian trade items.

White, Christine (Toronto)
[26] CHEMICAL AND TRACE ELEMENT ANALYSES OF HUMAN BONE FROM LAMANAI, BELIZE
Human bone from the lowland Maya site of Lamanai, Belize has been analyzed for the trace elements strontium, magnesium, and zinc for d11N and d13C of collagen in order to test the various models of diet over the time range from the Preclassic to Historic periods. Marine consumption as indicated by d13C and strontium is strongly associated with culture change yet protein consumption as indicated by d11N remains constant. N15 enrichment in a tomb burial suggests consumption of seafoods by high status males. These results are discussed in light of theories of Maya collapse.

White, John (Youngstown State)
[78] THE SUN SERPENTS: TWO FORT ANCIENT SOLSTICE EFFIGIES
Recent work in Southwestern Ohio in the shadow of the monumental Fort Ancient earthworks has brought to light two large serpent effigies. Constructed of uniformly selected limestone flagstones these effigies, designated Kern Effigy #1 [33WA372] and #2 [33WA373], were radiocarbon-dated to 1200 A.D., the period at which nearby Anderson Village was occupied by prehistoric peoples of the Fort Ancient Aspect. Observations, calculations, and the testing of a series of hypotheses indicates the likelihood that these effigies were utilized as ground markers for designating the summer and winter solstices.

White, Joyce C. (Pennsylvania)
[3] SETTLEMENT PATTERNS OF BAN CHIANG TRADITION SITES IN RELATION TO NATURAL RESOURCES: AN ETHNOECOLOGICAL CONTRIBUTION
The earliest inhabitants of Ban Chiang tradition sites in northeast Thailand, dating from the fourth millennium B.C., were familiar with rice, although not necessarily fully domesticated varieties. Suggestions by some scholars that the early inhabitants selected sites near streams and good rice land are considered too vague to be of predictive value. An ethnoecological study mapped the location of natural resources as currently understood and utilized by local inhabitants of the Ban Chiang area. Other related sites were surveyed relative to their local natural resources. From this study, a relationship between selected natural resources and early village settlement can be hypothesized.

White, J. C. (see Glanzman, W. [3])

White, Nancy Marie (South Florida)
[7] TESTING REMOTE SHELL MIDDENS IN THE APALACHICOLA VALLEY ESTUARY, NORTHWEST FLORIDA
Clam and oyster shell middens in the lower Apalachicola delta estuary are extremely remote. Sampling strategies are dictated by logistics of access, tides, water tables, etc. Sites may be predominantly freshwater clam (Rangia) or oyster, both, or necessitating different methods. Formation processes for different components show similarities in choice of the increasingly higher elevation in these wetlands but differences in resource procurement strategies and material culture. Knowledge of the river's fluvial history and changing channels is essential not only for interpretation of midden formation and range of species present but also for planning future testing.

White, Randall (New York)
[51] VARIATION AND CHANGE IN THE STRUCTURE OF AURIGNACIAN DECORATION AND BODY ORNAMENTATION
A pan European analysis of thousands of Aurignacian bone ornaments reveals previously unrecognized patterns of inter-regional, intra-regional and temporal variation that provide new insights into human organization at the beginning of the Upper Paleolithic. Strong regional differences in the form and technology of production of beads and pendants conform well to models of regional stylistic variation. However, there is a puzzling array of site-specific variation, particularly in decorative patterns, that suggests explanation. Linkages between body ornaments, exotic raw materials and the first representational art allow the construction of new models to tie together seemingly disparate developments of the basal Upper Paleolithic.

Whitley, T. G. (see Andrews, R. L.)[70]

Williams, Mark

Wilant, Michael D. (Springfield, Illinois)
[57] REFLECTIONS ON A LONG-TERM REGIONAL ARCHAEOLOGICAL PROGRAM: THIRTY YEARS OF MIDDLE WOODLAND STUDIES IN THE LOWER ILLINOIS VALLEY
In 1988 the Lower Illinois Valley archaeological program marked its third decade. Throughout its history the study of Havana-Hopewell culture has been a hallmark of this program. There have been numerous studies that provide a rich corpus of information ranging from technology to human health. These studies also provide an opportunity to evaluate one example of the development of a program of archaeological research. Focusing on the key concepts of Strum's settlement-subsistence studies, this paper critically reviews the program in terms of its integration, continuity, and contribution toward an understanding of Middle Woodland adaptive strategies.

Wickler, Stephen (Hawaii)
[74] LAPIT EXCHANGE: RECENT EVIDENCE FROM THE NORTHERN SOLOMON ISLANDS, MELANESIA
Research on Buka Island, Papua New Guinea has provided initial evidence for Lapita occupation within the main Solomon Island chain. Lapita pottery and associated stone tools were recovered from two locations on tidal reef flats. Initial analysis suggests a close relationship with material from a reef location on Nissan Island and general stylistic similarities with pottery from the southeast Solomons dating from ca. 2,900-3,500 B.P. Analysis of stylistic, morphological and compositional ceramic attributes and the sourcing of obsidian and ground stone tools is employed to identify the nature and extent of exchange during the Lapita period.

Widmer, Randolph (Houston)
Archaeologists traditionally classify most shell-bearing sites as shell middens leading to severe misidentification and misinterpretation of function of many sites. Shell-bearing sites can be formed by mangrove animals that feed off the estuary or by humans who harvest shellfish. It has been hypothesized that these formation processes have resulted in misinterpretation of site function and failure to recover numerous classes of data caused by inadequate excavation strategy. Research strategies and excavation tactics, drawn from work on numerous shell-bearing sites in Florida, are presented which will permit the collection of data to identify the formation processes responsible for the depositional history of sites, their function, and the potential features which might be present.

Willemsen, Kris H. (Washington)
[20] SPATIAL ANALYSIS AND FORMATION PROCESSES: PROBLEMS WITH THE CURRENT AFFAIR
Processes that contribute to the formation of the archaeological record must be deduced from physical characteristics of a deposit. Spatial analysis, used in achieving this goal, creates a contextual framework for interpretation. This method includes locational analysis but also extends to documentation of the formal properties of objects and deposits containing them. It is demonstrated that the growth of knowledge regarding the evolution of an archaeological deposit is inhibited by: 1) failure to create units that facilitate the systematization of archaeological phenomena, 2) reification of analytical units in behavioral terms, and 3) lack of an archaeologically relevant body of spatial-analytic theory.

Willet, Elizabeth Lyding (Massachusetts)
[29] PRODUCTION AND DISTRIBUTION OF ROMAN AMPHORAS
Ceramic production and distribution systems were closely interrelated during the Roman Period. Shipping amphoras are the most frequent ceramic finds at Roman land and underwater sites. They were produced by techniques similar to modern mass production, in factories located close to seaports or to river ports. From such export facilities, the filled amphoras were shipped in large numbers, often well defined routes, to their destinations throughout the Roman world. Production and distribution centered in different parts of the Roman world at different periods and were sometimes controlled by private individuals and sometimes subject to rigid governmental regulations.

Wiley, P. (see Snyder, L. M.)[55]

Williams, Mark (Lamar Institute)
[36] CHEIFLY COMPOUNDS
Many small scale Lamar mound sites are under three hectares in size. They have been variously represented as towns, villages, and ceremonial or administrative centers. Most researchers assume that the chief and common people lived at such sites. Ethnologists in Africa and South America have used the phrases "chieflly compound" or "court" to describe small habitations where a chief resided with
his wives, children, relatives, slaves, and attendants—often over 100 people—all in their own houses within a palisade. Common people were excluded, however. Many small Lamar mound sites in the South Appalachian area likely conformed to this pattern.

Williamson, Ray A. (Office of Technology Assessment (U.S. Congress)) and Fred Blackburn (White Mesa Institute)

[33] APPROACHES TO CURBING VANDALISM AND POT HUNTING OF ARCHAEOLOGICAL RESOURCES

Vandalism and pot hunting are taking an increasing toll on U.S. archaeological resources on both public and private land. A variety of techniques are examined that have been employed for curbing such activities and assessing their efficacy. Also discussed is the role of avocational archaeologists and other interested laymen in protecting and preserving these resources. In particular, an integrated educational and research program is described that involves professionals from several disciplines in the vast ‘‘Outdoor Museum’’ of the Southwest. Many of these methods can be implemented in other regions of the United States.

Williamson, R.A. (see Ambruster, C.) [78]

Williamson, Ronald F. (Archaeological Services Inc.) and William A. Fox (Ministry of Culture and Communications-Canada)

[19] BROWSING ON MEADOWOOD BLADES: AN INVESTIGATION OF REGIONAL EXCHANGE AND PRODUCTION SYSTEMS

Macro-regional uniformity of Meadowood Blades across southern Ontario is certainly evident, although attribute analyses of geographically separated assemblages suggest that interactions of attributes may correlate with skill of individual knappers or subtle differences in reduction activities. The reasons for these differences may be strictly technological, or they may be intended in a symbolic-informational sense for other members of the society. Indeed, they may simply represent subtle expressions of micro-regional ethnicity. Subsequent widespread distribution of Ohio Flint Ridge bifaces appears to signal both a breakdown in classic Meadowood technology and transition to more complex socio-political allegiances.

Willoughby, Pamela (Alberta)

[81] THE NATURE OF VARIATION WITHIN THE AFRICAN ACHEULEAN

Throughout the history of their research, Paleolithic archaeologists have consciously or unconsciously made use of models from palaeontology. This has colored their interpretation of technological change. Despite this, a case can still be made that the tempo as well as mode of Paleolithic change parallels the coeval trends in hominid speciation and evolution. Questions of the nature of such change are reviewed using the African Acheulean as a model. The Acheulean represents a period of over a million years duration with little variation over time and space. Ways to measure and interpret this variation are also outlined.

Wilson, Robert C. (National Park Service-Southeast Archaeological Center) and Thomas DesJean (NPS-Big South Fork National River and Recreation Area)

[33] VANDALISM BEHAVIOR IN THE SOUTHEAST NATIONAL PARKS: DIAGNOSES AND TREATMENTS

Over the past several years the Southeast Archaeological Center has been collecting data on vandalism of archaeological resources within the Southeast National Parks. A major monitoring program, funded by the Nashville District, U.S. Army Corps of Engineers at the Big South Fork National Park and Recreation Area, has resulted in identifying a number of behavioral characteristics of vandals for this area. This program, together with the need to monitor and record site conditions in the parks, has resulted in the development of several pilot training programs and park archaeological protection plans.

Winslow, Margaret Anne (City College of CUNY)

[50] MODELING PALEOSHORELINES AT TECTONICALLY ACTIVE MARGINS

The spatial distribution of coastal archaeological site heights and ages in tectonically active regions reveals a complex puzzle requiring eustatic and isotopic corrections, as well as an understanding of uplift/subsidence rates for its solution. Early Holocene paleoshoreline data and initial occupation ages from coastal habitats require both eustatic and isotopic corrections in order to identify patterns of uplift, tilting or subsidence. Modeling of uplifted marine terrace and archaeological data from the Shumagin Islands of Alaska reveals systematic patterns of differential uplift which define tilting fault blocks. Paleoshoreline analyses can be used to predict paleo-harbor geometries and the maximum expected age of a site in a given location.

Winter, Joseph

Winter, Joseph (New Mexico) [Discussant 78]

Winter, M.C. (see Joyce, A.) [69]

Wise, Karen (Northwestern)

[6] LATE INTERMEDIATE PERIOD DOMESTIC ARCHITECTURE OF LUKURMATA

The archaeology of households and domestic compounds provides important data on ethnic and social groupings as well as economy. Excavations at the North Point area of the site of Lukurmata, Bolivia, provide rare data on Late Intermediate Period domestic architecture in the southern Titicaca basin. Architectural features represent a domestic compound located directly on the shores of Lake Titicaca, and subsistence remains indicate fish processing was the major activity at this site. Analysis suggests that these features represent a long sequence of a lacustrine economy. It is suggested that the evidence at North Point represents a local ethnic group which maintained an economic focus on lake exploitation.

Wiseman, F. (see Poli, M.) [26]

Withrow, Barbara (Minnesota)

[74] PREHISTORIC PRODUCTION, DISTRIBUTION, AND USE OF STONE ADZES: IMPLICATIONS FOR THE DEVELOPMENT OF HAWAIIAN CHIEFDOMS

The role of adze stone procurement and adze distribution in prehistoric Hawaiian chiefdoms is assessed and used to reevaluate earlier theories such as those of Sahlin, Service, and Earle concerning the role of the exchange of material resources in the development of complex societies. Petrographic analysis is used to identify adze sources. Metrical data on stone adzes from the Island of Hawaii are also used to test hypotheses which correlate changes in adze production, distribution, and use with changes in Hawaiian craft specialization, political centralization, and social stratification.

Withrow, R. (see Whelan, M.) [32]

Witschey, Walter R.T. (Tulane)

[25] RECENT INVESTIGATIONS AT THE INLAND MAYA PORT CITY OF MUYIL, QUINTANA ROO, MEXICO

During 1987 and 1988, I directed two field seasons of research at the Maya site of Muyil, 25 kilometers south of Tulum in Quintana Roo Mexico. Results thus far document a large site (130 h) of long occupation (Late Preclassic through Late Postclassic). Survey and reconnaissance have revealed new small sites in the region, an internal sacbe system leading to a seaport, several architectural alignments of civic and ceremonial architecture and several residential architectural forms, many with extensive field walls. Initial features of the sacbe system suggest that inhabitants adapted port facilities to changing water levels.

Wolfarth, Lyne Mackin (Illinois)

[46] COMPUTER SIMULATION OF INFECTIOUS DISEASE DIFFUSION IN PROTOHISTORIC POPULATIONS

A computer simulation of the diffusion of infectious disease in Native American populations is described. Modeled on a nineteenth century Missouri River smallpox epidemic, this simulation pays particular attention to Native American demographic variables. These include: interaction between the sexes, household structures, site size and density, distance between sites, Native American migration and migration patterns, the values of simulation variables are changed to reflect a variety of prehistoric patterns and a range of disease parameters. The size and duration of simulated epidemics are reported with the objective of predicting infectious disease diffusion in protohistoric populations.

Wood, James, Henry C. Harpending, George R. Milner and Kenneth M. Weiss (Pennsylvania State)

[57] THE OSTEOLOGICAL PARADOX: LINKING MORTALITY AND MORBIDITY IN SKELETAL POPULATIONS

The salient characteristic of skeletal samples is severe selectivity; we observe individuals who died at each age, not all those at risk of dying. Consequently, inferring population prevalence from skeletal lesions is difficult at best. Hazards models of heterogeneous populations composed of subgroups with different distributions of 'frailty' display surprisingly different patterns of age-specific mortality. These models are employed to explore the linkage between pathological conditions and the risk of death in an Illinois skeletal series, and to illustrate the effects of underlying frailty distributions and the selectivity inherent in mortality samples.
Woodall, J. Ned (Wake Forest)
[63] SOPA AND NARTS: ACRONYMS WITHOUT ACRIMONY FOR THE 1990'S
The wise conservation of archaeological resources is, as always, determined by the available legal and fiscal tools, and the capabilities and objectives of archaeologists. In regard to the latter, two trends hold promise for the 1990's and beyond. The dramatic increase in archaeologists seeking certification by the Society for Professional Archaeologists (SOPA) and the creation of national and state research objectives to focus significance evaluations and data recovery programs.

Woodbury, Nathalie E.S. (Anthropology Newsletter) [Discussant 58]

Woodman, James (Northern Arizona)
[53] TOWARD AN UNDERSTANDING OF PREHISTORIC POLITICAL COMPLEXITY IN CENTRAL ARIZONA: AN EXAMPLE FROM FOURMILE RUIN
Fourmile ruin is a large aggregared site of some 500 rooms located two miles east of Taylor, Arizona. The core area of the site was occupied during the late 13th through the late 14th centuries, with the first phase of construction beginning in the early 13th century. This phase was characterized by the presence of a large number of small structures, which may have been used for religious or ceremonial purposes.

Woods, William I. and Neal H. Lopinot (Southern Illinois-Edwardsville)
[60] DYNAMIC PATTERNS OF FOOD PRODUCTION AT CAHOKIA
A dynamic model for aboriginal cropping practices has been developed for the Mississippian Cahokia settlement. The model is based on the variable distribution of soil properties and on hydrologic and other factors, and is considered to be a significant component of Cahokia's cultural landscape. The model is based on the variable distribution of soil properties and on hydrologic and other factors, and is considered to be a significant component of Cahokia's cultural landscape.

Woodworth, R. (see Blakely, R. J.) [19]

Woosley, Anne I. (Amendir Foundation, Inc. and Bart Olinger (Los Alamos National Laboratory)
[14] THE CASAS GRANDE CERAMIC TRADITION: PRODUCTION AND INTERREGIONAL EXCHANGE OF RAMES POLYCHROME
Ramos Polychrome occurs across northern Mexico and the southern Southwest. Accounting for the greatest number of vessels and sherds of any painted ware from Casas Grandes, it was produced for domestic consumption and trade. To determine its chemical signature, several hundred sherds from Chihuahua, Arizona, and New Mexico contexts were analyzed using X-ray fluorescence. XRF analysis addressed: 1) the homogeneity or homogeneity of Ramos Polychrome, 2) the distribution of ceramics directly attributable to a Casas Grande origin, and 3) whether the production center was or was not the major production center. These issues have important placement and effects within the region's ceramic trade network.

Woosley, A. I. (see Waters, M. R.) [40]

Worth, J. (see Hudson, C.) [1]

Wright, Henry (Michigan) [Discussant 72]

Wright, Melanie (Minnesota)
[80] IMPORTS AND CONSTRUCTION OF CULTURAL IDENTITY
Manufactured objects are not passive reflections of cultural reality but are actively involved in constructing it. Social meanings of objects are heightened when they are involved in a cultural trade. This paper contrasts the uses of Mediterranean imports at Early Iron Age Heuneburg and at Durnberg bei Salcin. At the former, evidence suggests a wholesale, direct adoption of Mediterranean objects and behaviors (among the elites) and the latter, incorporation of foreign items is more selective and transformational. This distinction is explained in terms of different constructions of social identity required by an agrarian center (Heuneburg) versus a mining center (Durnberg).

Wurtzberg, Susan (SUNY-Albany)
[21] LITHIC ANALYSES AND RESIDENTIAL PATTERNS AT SAYIL, MEXICO
During the Spring of 1988, lithics were collected and measured residential platforms at Sayil, Yucatan, Mexico. A combination of attribute analysis and compositional analysis is used to describe this lithic data base. Such an approach allows for the preliminary interpretation of the artefactual pattern of patterned within the community.

Zarin, Juris (Western Ontario)
[18] GENDER THEORY AND THE ARCHAEOLOGICAL RECORD: WHY IS THERE NO ARCHAEOLOGY OF GENDER?
This paper is concerned with 1) why there is no counterpart in the literature to the traditions of research on women and gender that are well-established in most other social science fields and 2) what are the prospects, at this juncture, for the development of an archaeology of gender. To address these questions I consider the methodological arguments, the nature of androcentric research, sexist stand-point theory, and post-modern critiques. I conclude that I can conclude that the prospects for the development of an archaeology of gender in the late 1980's are very good.

Wyman, Dee Ann (Licking County Archaeology and Landmarks Society)
Recent projects in Ohio, West Virginia, and Kentucky have yielded rich and diverse archaeobotanical assemblages that the Woodland period. Subsistence and environmental changes are explored from Early to Late Woodland, revealing broad intraregional trends with subtle, possibly significant, differences evident. The data are also used to examine distinctions between ceremonial and habitation contexts.

Wynn, Jack T. (USFS-Georgia)
[27] MISSISSIPPIAN PERIOD ARCHAEOLOGY IN THE GEORGIA BLUE RIDGE MOUNTAINS
A brief summary of archaeologcal investigations of the Mississippian Period in the Georgia Blue Ridge is given, with recommendations for future research and cultural resources management. Past research has included a few early excavations, Wauchope's WPA survey, and recent Appalachian Highway and U.S. Forest Service surveys. These mostly concentrated on a river bottom mounds. Forest Service and other compliance surveys have found few mound Mississippian sites. Bottomland agricultural village and mound center occupants apparently used managed for hunting and gathering of biological and mineral resources, but seldom lived there. This contrasts markedly with the upland Georgia Piedmont, which was heavily occupied.

Yentsch, Anne and Conrad M. Goodwin (New Jersey State Museum)
[16] DEFINING MORVEN'S ARCHAEOLOGICAL GARDEN LANDSCAPE
For the two years, the New Jersey State Museum has been conducting research at Morven, in Princeton, New Jersey, to locate the remains of a four and one-half acre eighteenth century ornamental garden and its associated working farm. Its imprint on the land will define the framework for reconstruction and restoration. This paper focuses on a pragmatic approach to the excavation of large areas with fine-grained soil stratigraphy and process features to recover information about the garden. This in turn is integrated with archaeobotanical data to produce data on both an archaeological description and an ethnographic context for the garden.

Yerkes, Richard W. (Ohio State) and John Noss, Jr. (Archaeological Services Consultants)
[36] SOCIAL DIFFERENTIATION IN MISSISSIPPIAN AND FORT ANCESTROPE SOCIETIES
Evidence for social differentiation is examined in examples of Cahokia Mississippian and Ohio Fort Ancient households from several types of domestic sites. Patterns of settlement organization, household size, storage facilities, and artifact assemblages are compared and contrasted. Factors other than social differentiation that may account for the variability in these attributes are considered, and the value of each attribute is a single index of social differentiation is weighed.

Zarin, Juris (Southwestern Missouri State)
[72] ARABIAN-AFRICAN CONTACTS ACROSS THE SOUTHERN RED SEA
Analysis of obsidian from archaeological sites on both sides of the southern Red Sea has revealed a variety of definite obsidian sources. Utilizing standard chemical and trace element techniques, this study indicates that exchange and other forms of contact across the Red Sea began around 5,000 B.C. In addition to this network of obsidian exchange, there is some suggestion that this trade pattern is part of a larger interaction sphere, involving East Africa, southern Arabia and India, that accommodated the flow of various exotic materials including flint, resins, and semi-precious stones.

Zarin, Juris (Southwestern Missouri State)
[52] DIET BREATH AND THE ADOPTION OF HORTICULTURE IN THE EASTERN UNITED STATES

An inverse correlation between walnuts and indigenous cultigens during the Woodland period is examined using the diet breadth model. The model predicts that greater abundance of resources with high caloric returns may result in the exclusion of lower return resources from diet breadth. Walnuts provide lower caloric returns than cultigens like sunflower, sumpweed, and goosefoot. Lower representation of walnuts coincident with increased cultigens in the archaeological record is consistent with the hypothesis that greater reliance on horticulture resulted in the exclusion of other food items from the Woodland diets. The hypothesis is tested against the archaeological records of four regions in the Southeast.

Zecharia, Eliebta (UCLA)

[28] SUBSISTENCE CHANGES IN COASTAL PERU DURING THE SECOND AND THIRD MILLENNIA B.C.

The Cotton Preceramic period in coastal Peru has long been described in terms of a maritime subsistence economy. Based on recent archaeological, ecological, and geomorphological fieldwork conducted in the Sepe Valley of Peru, this paper introduces a series of models which use the formal logic of integer programs. The models are implemented for several scenarios to investigate the subsistence behavior of the populations inhabiting the Sepe Valley during different phases of the Preceramic and Initial periods. The importance and feasibility of marine versus terrestrial diet in the Sepe Valley is evaluated. The results produced by the models lead to a reinterpretation of the subsistence behavior of coastal societies and provide a new sequence of economic changes during the Preceramic and Initial periods. The paper also demonstrates how integer programming allows for greater generality in analyzing resource use than the existing methods.

Zeder, Melinda (Smithsonian) and Elizabeth Myer (American)

[59] ANIMAL UTILIZATION AT UMM QSEIR

Recent findings from northern Mesopotamia indicate that the fifth millennium subsistence economies display greater flexibility than traditionally expected. Halaf potters at Umm Qseir took advantage of "game park conditions" of the Middle Khabor, exploiting steppic gazelle and onager as well as riverine game while using prolific domestic pigs as insurance against the eventuality of poor hunting. Caprils were exploited for secondary products and for meat. The persistence of wild gam in the late Uruk indicates that opportunities for hunting continued into the fourth millennium, but the focus on larger steppic game and the abandonment of swine herding point to a basic change from the Halaf in the nature of the late Uruk occupation.

Zellner, James (Pittsburgh)

[73] TOWARDS A REGIONAL CHRONOLOGY FOR NORTHERN MANABI PROVINCE, ECUADOR: CHRONO-STRATIGRAPHIC EVIDENCE FROM THE JAMA RIVER DRAINAGE

Although well-known as the territory of Ecuador's Jama-Coaque Culture, a complex prehispanic chieftain spanning some 2,000 years, northern Manabi Province is perhaps the least studied sector of coastal Ecuador, having a very poorly documented cultural chronology. Recent archaeological research centered in the Jama River drainage addresses this problem. Radiometric assays, tephro-chronological evidence, and ceramic data are marshalled from stratified sites in the middle and lower reaches of the drainage as a means of documenting a valley-wide sequence of cultural occupation, with special emphasis given to the large ceremonial center of San Isidro.

Ziegler, Joanna E. (College of the Holy Cross)

[80] THE MEDIEVAL PIETA: SCULPTURE OR FETISH?

The meaning of northern Pietas, the most popular later medieval religious theme, are redefined as objects of material culture. Returning to 16th century Iconoclastic writings and analyzing production history as well as material characteristics, I suggest that in the medieval context Pietas were used as fetishes or idols, not as displays of luxury or as precious works of art. Pietas encouraged an intensely private and literally empathic viewer response (because of its physical and tactile nature) to Christ and Mary—Pietas therefore were personally useful objects that may be employed as crucial social indices of religious attitudes and practices among ordinary people.

Zimmerman, Laurie and D. Gentry Steele (Texas A&M)

[43] DIETARY RECONSTRUCTION OF HUNTER-GATHERERS OF THE EASTERN MARGIN OF THE TAMALIUPIAN BIOTIC PROVINCE

Analyses of vertebrate and invertebrate remains from fourteenth Late Archaic to Late Prehistoric hunter-gatherer sites located along the eastern margin of the Tamaulipan Province represent the first dietary synthesis based upon an extensive inventory of sites of the region. The aboriginal populations in this area utilized a variety of terrestrial and aquatic food resources consisting of more than eighty genera. Comparison of the fourteen sites documents similar patterns of subsistence, the variety of fauna selected, the consistency regarding utilization of the diverse fauna throughout the area, and shifts in diet through time.

Zubrow, Ezra (SUNY-Buffalo)

[29] THE ARCHAEOLOGICAL IMPLICATIONS FOR CERAMICS OF FORMAL PRODUCTION AND DISTRIBUTION MODELS

Formal economic models demonstrate the relationship among the quantities of available inputs—labor, clay, wood—and the quantity of ceramic output. Distribution models predict who are the consumers. Fixed and variable inputs in the short and long term are examined in order to create long-run production functions. For household ceramic producers diseconomies rapidly outweigh economies of scale resulting in the transition to specialized ceramic shops. Analogously, the inelasticity of household demand is mathematically shown to result through distribution models in the development of ceramic traders. Ethnoarchaeological evidence is used to estimate the actual parameters of the models.

Zuidema, R. T. (Illinois)

[78] THE PILLARS OF CUSCO: THE CALENDRIAL AND ASTRONOMICAL SIGNIFICANCE

The most important device in Inca astronomy, used for calibrating the calendar, was a set of four pillars on the horizon of Cusco, by which sunset was observed. Earlier, I argued that sunset between the central pillars occurred on 3 September and helped define the synodic and sidereal lunar month around the following equinox. Here, I analyze the calendrical and ritual significance of the date, 10 April, when the sun set there again. This date has no apparent lunar associations. I also present data that could be used to discover the original placement of the ushnu from which the pillars were observed.

Zvelebil, M. (see Green, S.)

Zvelebil, M.
ABSTRACTS OF POSTERS

Ausec, Marne (Albion) and Patricia A. Urban (Kenyon)
DIFFERENTIAL DISTRIBUTIONS OF DESIGN ELEMENTS OF LATE CLASSIC PAINTED AND
INCISED POTTERY FROM THE NACO VALLEY, NORTHWESTERN HONDURAS

Design elements were studied on three classes of Late Classic Pottery: Conoje, Bichrome, and Mono Black varieties. Individual elements and combinations of elements were unevenly distributed within the region and within the major center of La Sierra. These differences may mark regional social groups, or status differences within certain designs restricted to the La Sierra elite. To date, distributions of other artifact categories support the second hypothesis.

Babcock, R. S.(see Stone, J.)

Brennan, C.(see Fish, S.)

Eddy, Frank W. and Dale Lightfoot (Colorado)
REMOTE SENSING OF GLAZE PERIOD TOWNS IN THE GALISTEO BASIN, NORTHERN NEW MEXICO

Two periods of glaze pottery ware were identified in the early summer of 1987 by the Stennis Space Center of NASA in flight line that intersected archaeological remains of the Galisteo Basin, northern New Mexico. Simultaneous collection of both thermal and infrared images of the Glaze Period towns, northern New Mexico. Simultaneous collection of both Thermal Infrared and Color Infrared Photography (CIR) were made over four large prehistoric towns including San Marcos, San Lazaro, Colorado and San Cristobal Pueblos. The flight lines recorded both the interior layout of the central place towns as well as information on surrounding villages and farming fields. Elements of the town-size settlements are clearly revealed including room blocks, plazas, gates, shrines and reservoirs. Using the remote sensing data, maps were prepared for field checking carried out during the summer of 1988. The transect coverage allows analysis of settlement networking and the dynamics of Glaze Period communities. Moreover, the use of the remote sensing data, such as GPR, allows determination of the density, size and shape of the settlements. A GIS based analysis of the settlement patterns can be used to identify the social and economic relationships between the Glaze Period settlements.

Ellis, G. Lain and Michael R. Waters (Texas A&M)
THE GEOARCHAEOLOGY OF PLACE: AN EXAMPLE FROM THE TUCSON BASIN, ARIZONA

Prehistoric landscapes are key elements in settlement pattern analysis. From A.D. 300-1450, Hohokam settlement along the San Xavier reach of the Santa Cruz River in the Tucson Basin is a function of distance from the floodplain. Dischronic variation in settlement pattern during this period, however, is partially a function of nearness to previous settlements, and partially a function of distance from the floodplain (e.g., channel entrenchment and filling, and sand dune, cienega and arroyo fan formation). The geoarchaeology of place, therefore, has the potential to help differentiate between possible cultural and geomorphic determinants of settlement.

Fish, P. R.(see Fish, S.)

Fish, Suzanne, Paul R. Fish (Arizona State Museum), Curtiss Brennan (Arizona) and John Madsen (Arizona State Museum)
INTEGRATION AND STRUCTURE OF A NONRIVERINE HOHOKAM CLASSIC PERIOD
COMMUNITY

In the northern Tucson Basin of southern Arizona, two earlier settlement clusters coalesced in the early Classic Period to form a single multi-site community covering 146 square kilometers. A platform mound site was centrally located within this integrated complex spanning basin floor to mountain flanks. Regional survey, mapping and excavation at both community and site levels have produced quantified distributions for horizontal and vertical differentiation. Levels of productive specialization and some consumptive patterns have been demonstrated that are commensurate with a strong network of exchange.

Kane, Sonya and Patricia A. Urban (Kenyon)
FORM AND STRUCTURE AT A TERMINAL POSTCLASSIC SITE IN NORTHWESTERN
HONDURAS

In 1988 a routine survey of terraces on the north bank of the Rio Chamelecon, northwestern Honduras, located a previously unknown Terminal Postclassic site. Brisas has 165 surface-visible constructions, about one-third looted or otherwise damaged, but no modern structures obscure the site.

Weymouth, John

Excavation revealed non-structural activity loci, the form and construction of elite and non-elite residences, and the presence of two round structures with talud-tablero-like architecture, one of which supported a monument in the form of an owl. Artifacts are congruent with contemporaneous materials from Postclassic Naco, some 7.5 kilometers to the southwest.

Lightfoot, D.(see Eddy, P. W.)

Madsen, J.(see Fish, S.)

Malville, Nancy (Colorado)
HUMAN MODIFICATION OF SKELETAL MATERIAL FROM TWO MASS BURIALS AT
YELLOW JACKET, SOUTHWESTERN COLORADO

The skeleton of two Pueblo II mass burial sites at Yellow Jacket were examined, providing evidence of cannibalism and possible cannibalism. Evidence of cannibalism was found in the bones of one of the mass burials. These findings are consistent with the hypothesis that the Saguaro mass burials are related to each other.

Reinhart, L. J.(see Stone, J.)

Scheely, James (Pennsylvania State)
STATISTICAL CORRESPONDENCE BETWEEN CERAMIC WASTERS AND TOTAL CERAMIC
PRODUCTION IN A CONTEMPORARY POTTERY WORKSHOP IN TEOTIHUACAN, MEXICO

Archaeologists are increasingly concerned with the reliability of behavioral inferences made on the basis of ceramic technological data. To analyze the data, a computer program was used to identify the correlation between ceramic technological and production data.

Starkey, J. D.(see Stone, J.)

Stone, Jane, Laurie J. Reinhart, J. Denbig Starkey and Ray S. Babcock (Montana State)
COMPUTERIZED THREE-DIMENSIONAL MODELING OF STRATIGRAPHY: ADVANTAGES,
FITPUNTS, AND DATA REQUIREMENTS

Computerized three-dimensional modeling enhances our interpretive capabilities by allowing efficient visualization and presentation of complex site structure. The system is a powerful tool for studying the relationship between three-dimensional modeling and archaeological interpretation. The computer program allows the model to be used as a basis for site modeling and for the generation of site maps.

Urban, P. A.(see Ausec, M.)

Urban, P. A.(see Kane, S.)

Waters, M. R.(see Ellis, G. L.)

Weymouth, John (Nebraska)
WHY NOT USE A GRADIOMETER?: ON THE USE OF MAGNETIC SURVEY DATA OBTAINED
AT TWO SENSOR HEIGHTS

Magnetic surveys are sometimes conducted using a gradiometer consisting of a vertical pair of magnetometer sensors. This configuration eliminates diurnal changes and long-range trends. If the data from the two sensors are separated, additional information is available. Possible significant longer-range patterning can be seen and estimates of anomaly source depth can be made. In fact, the gradiometer results can be approximated by filtering single-sensor data. These points will be discussed and examples of methodological applications discussed.
ABSTRACTS OF POSTERS

Ausec, Marcie (Albion) and Patricia A. Urban (Kenyon)
DIFFERENTIAL DISTRIBUTIONS OF DESIGN ELEMENTS OF LATE CLASSIC PAINTED AND INCISED POTTERY FROM THE NACO VALLEY, NORTHERN HONDURAS

Design elements were studied on three classes of Late Classic Pottery: Conejo Bichrome, Conejo (red on orange) and Mono (black on orange) varieties, Chameleon Polychrome (three varieties), a red and black on orange ware with affinities to Guaymas Polychrome, and several types within the Maya system of incised and red-painted vessels. Individual elements and combinations of elements were unevenly distributed within the region, and within the major central of La Sierra. These differences may mark regional social groups, or status differences with certain design restricted to the La Sierra elite. To date, distributions of other artifact categories support the second hypothesis.

Babcock, R. S. (see Stone, J.)
Brennan, C. (see Fish, S.)

Eddy, Frank W. and Dale Lightfoot (Colorado)
REMOTE SENSING OF GLAZE PERIOD TOWNS IN THE GALISTEO BASIN, NORTHERN NEW MEXICO

Two bands of infrared were flown in late summer of 1987 by the Sennis Space Center of NASA in flight lines that intersected archaeological ruins of the Galisteo Basin, northern New Mexico. Simultaneous collection of both thermal infrared images and color infrared photography (CIR) were made over four large prehistoric towns including: San Marcos, San Lazaro, Colorado and San Cristobal Pueblos. The flight lines recorded both the interior layout of the central place towns as well as information on surrounding villages and farm fields. Elements of the town-size settlements are clearly revealed including: room blocks, plazas, gates, shrines and reservoirs. Using the remote sensing data, maps were prepared for field checking carried out during the summer of 1988. The transect coverage allows analysis of settlement networking and the dynamics of Glaze Period communities. Moreover, in the context of the survey, both dates of these settlements data, show differential thermal emissivity. The CIR photography also is useful in constructing base maps, stereo-viewing of relief and identifying pebble mulched fields.

Ellis, G. Lain and Michael R. Waters (Texas A&M)
THE GEOARCHAEOLOGY OF PLACE: AN EXAMPLE FROM THE TUCSON BASIN, ARIZONA

Prehistoric landscapes are key elements in settlement pattern analysis. From A.D. 800-1450, Hohokam settlement along the San Xavier reach of the Santa Cruz River in the Tucson Basin is a function of distance from the floodplain. Diachronic variation in settlement pattern during this period, however, is partially a function of nearness to previous settlements, and partially a function of adjustment to changing landscape elements on the floodplain (e.g., channel entrenchment and filling, and sand dune, lentic and arroyo formation). The geoarchaeology of place, therefore, has the potential to help differentiate between possible cultural and geomorphic determinants of settlement.

Fish, P. R. (see Fish, S.)
Fish, Suzanne, Paul R. Fish (Arizona State Museum), Curtiss Brennan (Arizona) and John Madsen (Arizona State Museum)
INTEGRATION AND STRUCTURE OF A NONRIVERINE HOHOKAM CLASSIC PERIOD COMMUNITY

In the northern Tucson Basin of southern Arizona, two earlier settlement clusters coalesced in the early Classic Period to form a single multi-site community covering 146 square kilometers. A platform mound site was centrally located within this integrated complex spanning basin floor to mountain flanks. Regional survey, mapping and excavation at both community and site levels have produced quantified distributions for horizontal and vertical differentiation. Levels of productive specialization and some consumptive patterns have been demonstrated that are commensurate with a strong network of exchange.

Kane, Sonya and Patricia A. Urban (Kenyon)
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Weymouth, John

Excavation revealed non-structural activity loci, the form and construction of elite and non-elite residences, and the presence of two round structures with talud-tablero-like architecture, one of which supported a monument in the form of an owl. Artifacts are congruent with contemporaneous materials from Postclassic Naco, some 7.5 kilometers to the southwest.

Lightfoot, D. (see Eddy, F. W.)

Madsen, J. (see Fish, S.)

Malville, Nancy (Colorado)
HUMAN MODIFICATION OF SKELETAL MATERIAL FROM TWO MASS BURIALS AT YELLOW JACKET, SOUTHWESTERN COLORADO

Taphonomic characteristics of two Pueblo II mass burials at Yellow Jacket sites SMT1 and SMT3 are similar to those of other Anasazi mass burials for which cannibalism has been postulated. Evidence of human modification of the bone assemblages includes cutting, perimortem bone breakage, burning, and possible tool manufacture. Although the two sites are only 300 meters apart, treatment of the material differs considerably from one site to the other. Breakage of the SMT3 material (eight individuals) is nearly total and is far more extensive than that of the SMT1 material (four individuals).

Reinhart, L. J. (see Stone, J.)

Sheehy, James (Pennsylvania State)
STATISTICAL CORRESPONDENCE BETWEEN CERAMIC WASTERS AND TOTAL CERAMIC PRODUCTION IN A CONTEMPORARY POTTERY WORKSHOP IN TEOTIHUACAN, MEXICO

Archaeologists are increasingly concerned with the reliability of behavioral inferences made on the basis of fragmentary ceramic materials excavated at archaeological sites. This problem is examined from the perspective of a contemporary potting community in Teotihuacan, Mexico. The frequency percent and weight percent of ceramic debris distributed around a kiln are compared statistically with the recorded output of Vessel Form Classes fired in the kiln, to evaluate the correspondence between ceramic wasters and the actual production repertoire of the contemporary potters.

Starkey, J. D. (see Stone, J.)

Stone, Jane, Laurie J. Reinhart, J. Denbigh Starkey and Ray S. Babcock (Montana State)
COMPUTERIZED THREE-DIMENSIONAL MODELING OF STRATIGRAPHY: ADVANTAGES, PITFALLS, AND DATA REQUIREMENTS

Computerized three-dimensional modeling enhances our interpretive capabilities by allowing efficient visualization and presentation of the internal structure of a deposit, depositional history, and point-in-time reconstructions. A new algorithm for three-dimensional modeling allows generation of the model directly from strata maps with exceptional resolution and color manipulation, 360 degree rotation with appropriate lighting/shading, and the ability to extract specific features and/or structures. Visual realism is achieved using semi-transparency and smooth surfaces, unlike previous computer methods. Some current field recording practices are inadequate for three-dimensional modeling. New field data standards are suggested. Examples from two sites are presented.

Urban, P.A. (see Ausec, M.)

Urban, P.A. (see Kane, S.)

Waters, M. R. (see Ellis, G. L.)

Weymouth, John (Nebraska)
WHY NOT USE A GRADIOMETER?: ON THE USE OF MAGNETIC SURVEY DATA OBTAINED AT TWO SENSOR HEIGHTS

Magnetic surveys are sometimes conducted using a gradiometer consisting of a vertical pair of magnetometer sensors. This configuration eliminates diurnal changes and long range trends. If the data from the two sensors are separately used, additional information is available. Possibly significant longer-range patterning may be seen and estimates of anomalous source depth can be made. In fact, the gradiometer results can be approximated by filtering single-sensor data. These points will be discussed and comparisons made with excavation results using two sets of magnetic and excavated data from a Mississippian site (23SH11) in Missouri.
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