

W H M

CELEBRATING

THE 50TH

ANNIVERSARY

Society for
American Archaeology

ANNUAL MEETING
May 1-5, 1985
RADISSON HOTEL—DENVER

PROGRAM AND ABSTRACTS

**SOCIETY FOR
AMERICAN ARCHAEOLOGY**
Fiftieth Annual Meeting

Program Chair: Dee F Green

Program Committee: Steadman Upham

50th Anniversary Committee: Jeremy Sabloff, Chair

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David J Meltzer

Patty Jo Watson

Gordon R Willey

Nathalie F S Woodbury

Local Arrangements Committee: Frederick Lange

Steve Cassells

Mark Guthrie

Joyce L Herold

Marianne Lorenz

William Tate

Leslie Wildesen

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President Elect: Don D Fowler

Secretary: Leslie Wildesen

Secretary Elect: Bruce Smith

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Editor: Patty Jo Watson

Executive Committee Members: Sylvia Gaines (1985)

Ruthann Knudson (1985)

Mark P Leone (1986)

Thomas Hester (1986)

**PROGRAM AND ABSTRACTS
of the Fiftieth Annual Meeting
Denver, Colorado
May 1-5, 1985**

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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.

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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, 1511 K Street NW, Washington DC 20005.

Business Meeting The Society's annual business meeting will begin at 10 AM on Saturday in the Grand Ballroom.

Convention Office Any problems or special requests during the meeting should be reported to the Convention Office off the Convention Lobby.

Exhibits Exhibits will be displayed in the Breckenridge Room 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 Breckenridge Room during the exhibit hours.

Message and Information Center A self-service message center will be open in the Convention Lobby from 4 PM to 8 PM Wednesday, and from 8 AM to 6 PM Thursday through Sunday. To reach the message center, call the Radisson Hotel main number (303/893-3333) and ask for the SAA message center.

New Member Reception Officers of the Society will host a reception for all new SAA members and for members attending their first annual meeting on Wednesday at 8 PM in the Denver Room.

Open House Everyone is invited to the open receptions (cashiered bar) on Thursday and Friday at 9:30 PM in the Grand Ballroom Foyer.

Placement Service A placement service will be conducted in the Colorado Room 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.

GENERAL INFORMATION

Registration Registration, which includes a copy of the Program and Abstracts, is required for attendance at all sessions. Registration desks will be open from 4 PM to 8 PM on Wednesday, from 7:30 AM to 4 PM on Thursday, Friday and Saturday, and from 7:30 AM to noon on Sunday. Members who preregistered by April 15 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 Session 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 the Birch room from Wednesday at 6 PM and thereafter throughout the meeting for presenters who wish to check their slides before their presentation.

ANNUAL MEETINGS OF THE SOCIETY FOR AMERICAN ARCHAEOLOGY

Meeting#	Place	Date
1st	Andover, Massachusetts	December, 1935
2nd	Washington, DC	December, 1936
3rd	Milwaukee, Wisconsin	May, 1938
4th	Ann Arbor, Michigan	May, 1939
5th	Indianapolis, Indiana	April, 1940
6th	Minneapolis, Minnesota	May, 1941
7th	Cincinnati, Ohio	May, 1942
8th	Because of travel difficulties and other wartime restrictions, the business of the annual meeting in 1943 was conducted by mail by the Executive Committee whose actions were approved at the next annual meeting.	
9th	Washington, DC	May, 1944
10th	Washington, DC	May, 1945
11th	Indianapolis, Indiana	May, 1946
12th	Ann Arbor, Michigan	May, 1947
13th	Milwaukee, Wisconsin	May, 1948
14th	Bloomington, Indiana	May, 1949
15th	Norman, Oklahoma	May, 1950
16th	Evanston, Illinois	May, 1951
17th	Columbus, Ohio	May, 1952
18th	Urbana, Illinois	May, 1953
19th	Albany, New York	May, 1954
20th	Bloomington, Indiana	May, 1955
21st	Lincoln, Nebraska	May, 1956
22nd	Madison, Wisconsin	May, 1957
23rd	Norman, Oklahoma	May, 1958
24th	Salt Lake City, Utah	May, 1959
25th	New Haven, Connecticut	May, 1960
26th	Columbus, Ohio	May, 1961
27th	Tucson, Arizona	May, 1962
28th	Boulder, Colorado	May, 1963
29th	Chapel Hill, North Carolina	May, 1964
30th	Urbana, Illinois	May, 1965

31st	Reno, Nevada	May, 1966
32nd	Ann Arbor, Michigan	May, 1967
33rd	Santa Fe, New Mexico	May, 1968
34th	Milwaukee, Wisconsin	May, 1969
35th	Mexico City, Mexico	May, 1970
36th	Norman, Oklahoma	May, 1971
37th	Bal Harbour, Florida	May, 1972
38th	San Francisco, California	May, 1973
39th	Washington, DC	May, 1974
40th	Dallas, Texas	May, 1975
41st	St. Louis, Missouri	May, 1976
42nd	New Orleans, Louisiana	April, 1977
43rd	Tucson, Arizona	May, 1978
44th	Vancouver, Canada	April, 1979
45th	Philadelphia, Pennsylvania	May, 1980
46th	San Diego, California	April-May, 1981
47th	Minneapolis, Minnesota	April, 1982
48th	Pittsburgh, Pennsylvania	April, 1983
49th	Portland, Oregon	April, 1984

SOCIETY FOR AMERICAN ARCHAEOLOGY

Past Presidents

(*Deceased)

A C Parker *	1935-36	Richard B Woodbury	1958-59
Diamond Jeness *	1936-37	Jesse D Jennings	1959-60
A V Kidder *	1937-38	Erik K Reed	1960-61
Edgar B Howard *	1938-39	Junius Bird *	1961-62
Neil Judd *	1939-40	David A Baerreis	1962-63
W C McKern	1940-41	James A Ford *	1963-64
Glenn Black *	1941-42	Albert C Spaulding	1964-65
Nels C Nelson *	1942-43	Paul S Martin *	1965-66
Emil W Haury	1943-44	Joe B Wheat	1966-67
J Alden Mason *	1944-45	Gordon R Willey	1967-68
Carl E Guthe *	1945-46	H Marie Wormington	1968-69
Frederick Johnson	1946-47	Ignacio Bernal	1969-70
Douglas S Byers *	1947-48	Robert Lister	1970-71
Waldo R Wedel	1948-49	Richard S. MacNeish	1971-72
J O Brew	1949-50	Charles C DiPeso *	1972-73
Frank H H Roberts Jr *	1950-51	Douglas W Schwartz	1973-74
James B Griffin	1951-52	Charles R McGimsey III	1974-75
Irving Rouse	1952-53	Stuart Struever	1975-76
Gordon Ekholm *	1953-54	Raymond H Thompson	1976-77
Robert Wauchope *	1954-55	Cynthia Irwin-Williams	1977-79
W Duncan Strong *	1955-56	Fred Wendorf	1979-81
William A Ritchie	1956-57	Richard E W Adams	1981-83
George I Quimby Jr	1957-58	George C Frison	1983-85

AWARDS TO ARCHAEOLOGISTS, 1946-84
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 Otis 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

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

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 Mehringer
- 1980 James B Griffin
- 1981 Karl W Butzer
- 1982 David A Barreis
- 1983 John E Guilday (posthumously)
- 1984 (No Award)

DIRECTORY OF MEETING ROOMS
Radisson Hotel—Denver

BALLROOM COMPLEX

Lobby Level:

- Convention Lobby
- Convention Foyer
- Grand Ballroom
- Junior Ballroom
- Assembly I

Mezzanine Level:

- Denver
- Spruce
- Century
- Gold
- Silver
- Colorado
- Aspen
- Birch
- Cedar

CONVENTION CENTER COMPLEX

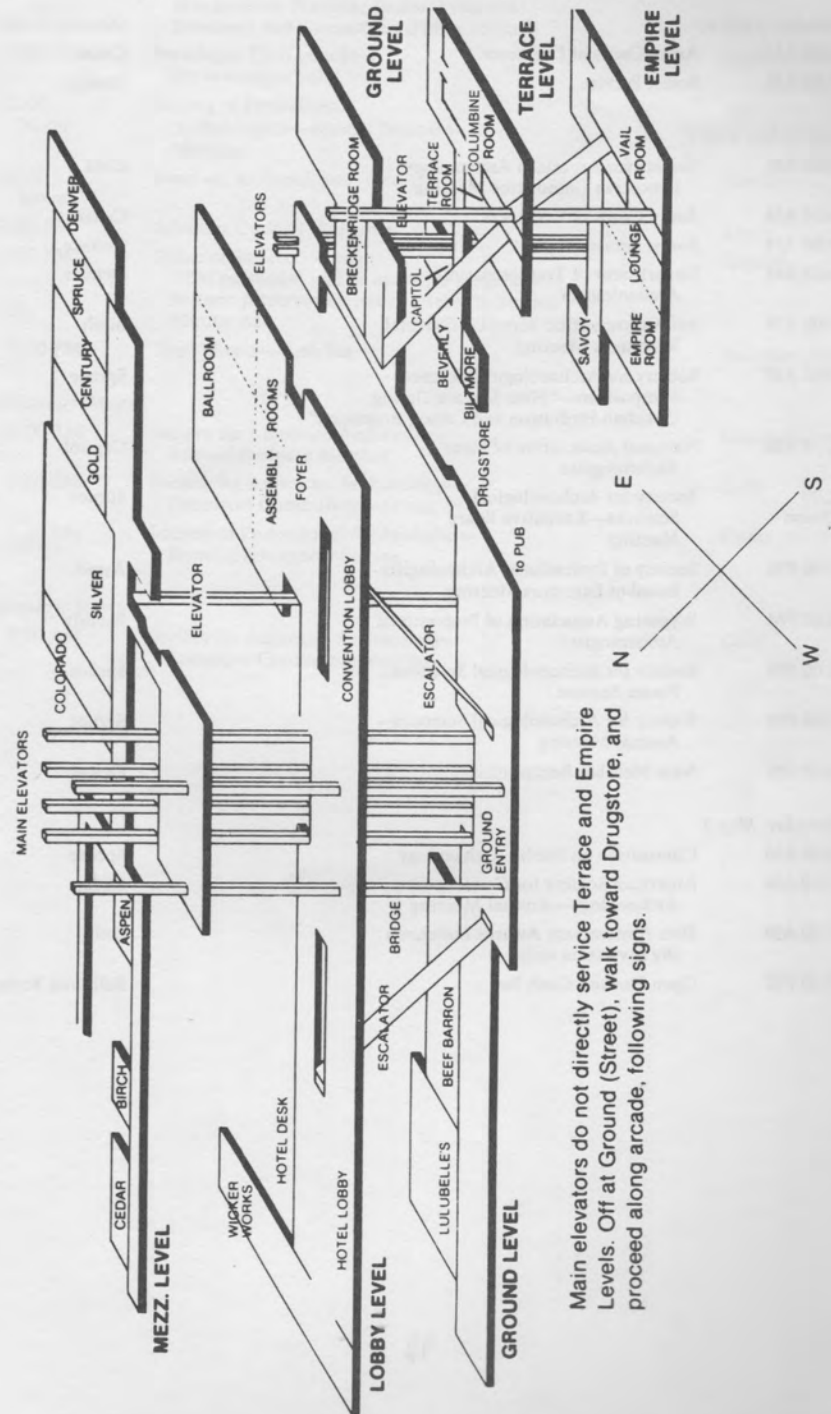
Ground Level

- Breckenridge

Terrace Level

- Biltmore
- Beverly
- Capitol
- Terrace
- Columbine

RADISSON HOTEL—DENVER



BUSINESS AND SOCIAL EVENTS

Tuesday, April 30

8:00 AM Army Corps of Engineers
8:00 AM Forest Service

Meeting Room

Cedar
Terrace

Wednesday, May 1

8:00 AM Society for American Archaeology—
Executive Committee Meeting
8:00 AM Army Corps of Engineers
8:00 AM Forest Service
8:30 AM Department of Transportation
Archeologists
9:00 AM Soil Conservation Service—Cultural
Resources Meeting
9:00 AM Society for Archaeological Sciences
Symposium—"Near Surface Dating:
Obsidian Hydration and Cation Reactions"
11:30 AM National Association of State
Archeologists
12:00 Noon Society for Archaeological
Sciences—Executive Board
Meeting
1:00 PM Society of Professional Archeologists—
Board of Directors Meeting
2:00 PM Wyoming Association of Professional
Archeologists
2:00 PM Society for Archaeological Sciences—
Poster Session
5:00 PM Society for Archaeological Sciences—
Annual Meeting
8:00 PM New Member Reception

Gold
Cedar
Terrace
Denver
Birch
Spruce
Capitol
Spruce
Aspen
Beverly
Spruce
Spruce
Denver

Thursday, May 2

8:00 AM Committee on Public Archaeology
11:30 AM American Society for Conservation
Archaeology—Annual Meeting
11:30 AM 50th Anniversary Awards Luncheon
(By invitation only)
9:30 PM Open House—Cash Bar

Spruce
Cedar
Gold
Ballroom Foyer

Friday, May 3

10:00 AM The DARCOM Archeological Overview and
Management Planning Project 1982-85:
Summary and Assessment (Public Invited)
11:30 AM Presidents Club Luncheon
(By invitation only)
12:00 Noon Society of Professional
Archeologists—Annual Business
Meeting
12:00 Noon Panel on Archaeological Grants
2:00 PM Advisory Council Workshop
2:00 PM Office of Surface Mining
OSM personnel will be available to discuss
historic preservation issues related to Surface
Mining Act.
9:30 PM Open House—Cash Bar

Cedar
Gold
Spruce
Denver
Cedar
Capitol
Ballroom Foyer

Saturday, May 4

10:00 AM Society for American Archaeology—
Annual Business Meeting
1:00 PM Society for American Archaeology—
Executive Committee Meeting
1:30 PM Society of Professional Archeologists—
Board of Directors Meeting

Grand Ballroom
Gold
Cedar

Sunday, May 5

8:00 AM Society for American Archaeology—
Executive Committee Meeting

Gold

PROGRAM

TUESDAY MORNING, APRIL 30, 1985

- 9:00 **ARMY CORPS OF ENGINEERS**
Cedar

WEDNESDAY MORNING, MAY 1, 1985

- 8:00 **SOCIETY FOR AMERICAN ARCHAEOLOGY**
Gold
Executive Committee Meeting
- 8:00 **ARMY CORPS OF ENGINEERS**
Cedar
- 8:30 **DEPARTMENT OF TRANSPORTATION ARCHEOLOGISTS**
Denver
- 9:00 **SOIL CONSERVATION SERVICE**
Birch
Cultural Resources Meeting
- 9:00 **SOCIETY FOR ARCHAEOLOGICAL SCIENCES**
Spruce
Symposium: Near Surface Dating: Obsidian Hydration and Cation Reactions
- 11:30 **NATIONAL ASSOCIATION OF STATE ARCHAEOLOGISTS**
Capitol
- 12:00 **SOCIETY FOR ARCHAEOLOGICAL SCIENCES**
Spruce
Executive Board Meeting

WEDNESDAY AFTERNOON, MAY 1, 1985

- 1:00 SOCIETY OF PROFESSIONAL ARCHEOLOGISTS
Aspen
Board of Directors Meeting
- 2:00 WYOMING ASSOCIATION OF PROFESSIONAL
Archeologists
Beverly
- 2:00 SOCIETY FOR ARCHAEOLOGICAL SCIENCES
Spruce
Poster Session
- 5:00 SOCIETY FOR ARCHAEOLOGICAL SCIENCES
Spruce
Annual Meeting

WEDNESDAY EVENING, MAY 1, 1985

- 8:00 SOCIETY FOR AMERICAN ARCHAEOLOGY
Denver
Reception for New Members

THURSDAY MORNING, MAY 2, 1985

- 8:00 SAA COMMITTEE ON PUBLIC ARCHAEOLOGY (COPA)
Spruce

(1) Symposium: ORGANIZATIONAL COMPLEXITY IN LATE CLASSIC COPAN, PART I: HOUSEHOLD AND SOCIAL CLASS

Junior Ballroom
Organizer and Chairperson: William T. Sanders

Participants

- 8:00 Julia A. Hendon, The Use of Space and the Functional Interpretation of Structures
- 8:20 James J. Sheehy, Demographic Aspects of Elite Households in Late Classic Copan
- 8:40 Melissa Diamanti, Household Composition and Organization
- 9:00 Rebecca Storey, Burials and Social Class: Biological Aspects
- 9:20 James Hatch and Dienje Kenyon, A Preliminary Social Status Taxonomy for the Copan Maya
- 9:40 Marilyn P. Beaudry, Late Classic Painted Ceramics as Indicators of Social Class
- 10:00 Andrea I. Gerstle, Ethnic Diversity in Late Classic Copan, Honduras
- 10:20 Elliot M. Abrams, Architecture, Labor, and Social Class at Copan, Honduras
- 10:40 Randolph J. Widmer, Economic Specialization at Copan
- 11:00 Discussants: William A. Haviland and Gordon R. Willey

(2) General Session: ARCHAEOLOGICAL THEORY, METHOD, AND TECHNIQUE

Silver
Chairperson: Joseph A. Tainter

Participants

- 8:00 Susan Kent, Theory and Truth in Archaeology: The Search Continues

Thurs morning May 2
Wednesday Afternoon, May 1

- 8:20 Joel Gunn, Modeling of Short Interval Culture and Climatic Change Time Series
- 8:40 George C. Knight, Pragmatics and Meaning for the Archaeological Record
- 9:00 Veletta Canouts, Stylistic Boundaries: The Structure of Information Exchange
- 9:20 Melody Pope and Tamara L. Bray, The Separation of History and Science: Implications for Archaeological Thought
- 9:40 Albert G. Oetting, Sociopolitical Complexity in Aboriginal California: A Review of the Evidence
- 10:00 Marc Berman and Brian Bauer, Other Lands: The Challenge of Ethnohistory to the New Sciences
- 10:20 Francis B. Harrold and Raymond A. Eve, Pseudoarchaeology: Who Believes It and Why
- 10:40 Marc G. Stevenson, Sourdoughs and Cheechakos: The Emergence of Ethnic Identity Among Non-Sedentary Populations
- 11:00 Michael E. Smith, The Archaeology of Social Stratification: Measuring Wealth From Household Artifacts
- 11:20 Gina L. Barnes, Landscape Reconstruction for Investigating Protohistoric Landuse Patterns

(3) General Session: ARCHAEOLOGICAL RESEARCH IN THE SOUTHWESTERN UNITED STATES

Grand Ballroom
Chairperson: Steadman Upham

Participants

- 7:40 Peter J. Gleichman and Carol Legard Gleichman, Nature of the Pueblo III Occupation on Central Black Mesa, Arizona
- 8:00 Deborah L. Nichols and Shirley Powell, Demographic Reconstructions in the American Southwest: The Relationship between Expectations and Data
- 8:20 Anne Trinkle Jones, Spatial and Temporal Variation in Grand Canyon Subsistence and Technology
- 8:40 Luran W. Ritterbush, Implications for Prehistoric Water Collection and Conservation at Wupatki National Monument
- 9:00 Carl D. Halbirt and Richard S. Ciolek-Torrello, Changing Interactions in the Northern Mogollon Region Prior to A.D. 1000
- 9:20 Judy Brunson, Cushing's Los Muertos: The Dead Can Rise Again
- 9:40 T. Kathleen Henderson, Dating the Hohokam: New Dates from La Ciudad
- 10:00 Susan J. Wells, Archaic and Hohokam Settlement in the Eastern Tucson Basin
- 10:20 John M. Andersen, Linguistic Implications for Archaeological Study of the Hohokam Regional System
- 10:40 Stephen H. Lekson, The Idea of the Kiva in Anasazi Archaeology
- 11:00 Larry V. Nordby, Activity Pattern Identification Through Model Building and Testing: Southwest Examples
- 11:20 Robert D. Leonard, Late Puebloan Subsistence Diversification: A Product of Sample Size Effects

(4) Symposium: REGIONAL PERSPECTIVES ON THE PLEISTOCENE PREHISTORY OF THE OLD WORLD

Beverly
Chairperson: Olga Soffer

Participants

- 8:00 Margaret Conkey, Too Big a Bite? The Place of Regional Studies in Contemporary Paleolithic Archaeology
- 8:20 John W. K. Harris, Burning Issues: Archaeological Studies of the Lower Pleistocene in East Africa
- 8:40 Lewis R. Binford, Taphonomy at a Distance: Zhoukoudian
- 9:00 Harold L. Dibble, Reduction Sequence in the Manufacture of Mousterian Implements of France
- 9:20 Nicholas David and Harvey M. Bricker, Perigordian and Noailian in the Greater Perigord
- 9:40 Randall White, Upper Paleolithic Assemblage Variation in the Perigord: Some Sampling Problems

- 10:00 Jean Philippe Rigaud and Jan F. Simek, "Arms Too Short to Box with God": Problems and Prospects for Paleolithic Prehistories in Dordogne France
- 10:20 Brian Hayden and Brian Chisholm, The Role of Salmon in the Upper Paleolithic of Southwestern France
- 10:40 Francoise Audouze, Towards a Reconstruction of Magdalenian Behavior of Hunters: The Settlement of Verberie in the Paris Basin
- 11:00 Discussants: James A. Brown, George C. Frison, and Joachim Hahn

(5) Symposium: POTTERY STUDIES IN THE NORTHEAST: ANALYTICAL TECHNIQUES AND ANTHROPOLOGICAL CONSIDERATIONS

Terrace

Organizer and Chairperson: Lucianne Lavin

Participants

- 8:00 Mary Anne Niemczycki, The Genesee Connection: Iroquois Origins in Western New York
- 8:20 Barbara E. Luedtke, Regional Variation in Massachusetts Ceramics
- 8:40 E. Pierre Morenon, Rhode Island Potsherds: High Tech Studies of Tiny and Worn Fragments
- 9:00 Susan N. Mayer, Ceramics at Fort Ninigret, Charleston, Rhode Island
- 9:20 Harold D. Juli, Middle Woodland Ceramics in Eastern Connecticut: Form, Function, Context, and Culture History
- 9:40 Renee Kra and Lucianne Lavin, Survey of Ceramics from the Lower Quinnipian River Valley and Adjacent Coastal Areas Connecticut
- 10:00 Cecilia S. Kirkorian and Nancy S. Dickinson, Prehistoric Ceramic Sample Analysis from Southwestern Connecticut
- 10:20 Lucianne Lavin, Pottery Classification and Cultural Models in Southern New England Prehistory
- 10:40 R. Michael Stewart, Ceramics of the Lower Delaware River Valley
- 11:00 Jay F. Custer, Late Woodland Ceramics and Social Boundaries in Southeastern Pennsylvania and the Northern Delmarva Peninsula
- 11:20 Jeffrey Kalin, Life Before Sherds: The Replication and Use of Woodland Ceramic Vessels
- 11:40 Discussant: Bert Salwen

(6) Symposium: COMPUTER-BASED GEOGRAPHIC INFORMATION SYSTEMS: A TOOL OF THE FUTURE FOR SOLVING PROBLEMS IN THE PAST

Columbine

Organizers and Chairpersons: Kenneth L. Kvamme and Robert J. Hasenstab

Participants

- 8:00 Kenneth V. Kvamme, The Fundamentals and Potential of Geographic Information Systems Techniques for Archaeological Spatial Research
- 8:20 Richard Baily, Donald Howes, Steven Hackenberger, and David Wherry, Geographic Information Processing in Land Use Modeling and Testing in the Columbia River Basin
- 8:40 Dan Martin and Mike Garratt, The Utility of MOSS to Cultural Resource Management
- 9:00 Robert J. Hasenstab, Agroecology and Geopolitics: An Analysis of Iroquoian Settlement Change Through GIS Techniques
- 9:20 Winifred Creamer, The Upper Kletthla Valley: Computer Generated Maps of Site Location
- 9:40 Mitchell T. Mulholland, Mid-Holocene Population Change in Southern New England: A Geographic Information Systems Approach
- 10:00 Larry Gorenflo, Geographic Information Systems and Regional Analysis in Archaeology
- 10:20 Terry A. Ferguson, Use of Geographic Information Systems to Recognize Patterns of Prehistoric Cultural Adaptation
- 10:40 Robert H. Lafferty III, Anthropological Theory and GIS Analysis
- 11:00 Discussants: Christopher Peebles and Timothy Kohler

(7) General Session: RESEARCH IN ZOOARCHAEOLOGY, FAUNAL ANALYSIS AND TAPHONOMY

Denver

Chairperson: Pamela M. Bumstead

Participants

- 8:00 Duncan Metcalf and Kevin T. Jones, Recalculating Binford: Simple Methods for Calculating Animal Body Part Utility Indices
- 8:20 Margaret F. Glass, Refuse Disposal and Bone Accumulation in Hohokam Villages
- 8:40 Paul Charles Rissman, Assessing Seasonal Pastoralism: Annual Rings in the Teeth of Domestic Mammals
- 9:00 D. Gentry Steele, Recognition of Taphonomic Provenience as an Aid for Identifying Agents Causing Bone Modification
- 9:20 Kenneth E. Juell and David N. Schmitt, Culturally Versus Naturally Deposited Bones: Explorations in Small-Animal Taphonomy
- 9:40 Gary B. DeMarcey, Possible Causes for Bison Bone Breakage at an Antelope Creek Focus Site
- 10:00 James S. Oliver, Bone Bed Formation Processes and the Interpretation of Bone Distribution Patterns on Bison Kill Sites
- 10:20 Esmee Webb, The Extent to which Faunal Remains in European Middle Paleolithic Cave Sites Reflect Human Activity: An Essay in Applied Taphonomy
- 10:40 R. Lee Lyman, Paleoecological Interpretations of Archaeologically Rare Taxa in the Holocene of Eastern Washington
- 11:00 Karla D. Kusmer, Owl Pellet Taphonomy: Archaeological Considerations
- 11:20 Nan A. Rothschild, Faunal Insights from Modern Food Remains

(8) General Session: RESEARCH IN LITHIC AND MICROWEAR ANALYSIS

Assembly I

Chairperson: Adrienne Anderson

Participants

- 7:40 Patrick C. McCoy, Biogeoclimatic Factors of Production in a Hawaiian Alpine Desert Adze Quarry
- 8:00 Carole E. Sussman, Initial Results of an In-Depth Investigation of Microwear Analysis on Experimental Quartz Tools
- 8:20 Mark E. Miller, Manufacturing Technology of Hell Gap Projectile Points at the Seminole Beach Site in Wyoming
- 8:40 A. Lee Novick, Lithic Tool Curation and Mobility: An Example From South Carolina
- 9:00 Robert Joslin-Jeske, An Economic Analysis of the Lithic Assemblage From the Kuhlman Mound Site, Adams County, Illinois
- 9:20 Ronald H. Towner, Projectile Point Rejuvenation: A Technological Analysis
- 9:40 Pamela S. Stephenson, Lithic Refuse Disposal Patterns: An Archaeological Study
- 10:00 Susan M. Hector and Martin D. Rosen, Identification of Activity Areas by Flake Attribute Analysis
- 10:20 Joseph E. Granger, Intrusive "Types" or Shared Lithic Reduction Sequence: Functional Variation at the Archaic-Woodland Interface in the Lower Great Lakes
- 10:40 Gaye Burton, Microdebitage or Geodebitage: Problems in Distinguishing Cultural From Natural Sediment Practices
- 11:00 Elizabeth D. Vance, Potential of Microartifacts Other Than Microdebitage
- 11:20 Frederic R. Mattfield, Techniques for Observation and Photography of Microartifacts
- 11:40 George Lanier and Walter A. Dodd, The Systematic Identification of Stone from Archaeological Sites

11:30 SOCIETY FOR AMERICAN ARCHAEOLOGY

Gold

50th Anniversary Awards Luncheon

11:30 AMERICAN SOCIETY FOR CONSERVATION ARCHAEOLOGY

Cedar

Annual Meeting

THURSDAY AFTERNOON, MAY 2, 1985

(1) Symposium (continued): ORGANIZATIONAL COMPLEXITY IN LATE CLASSIC COPAN, PART II: SETTLEMENT AND THE COPAN POLITY

Junior Ballroom

Organizer and Chairperson: William T. Sanders

Participants

- 1:00 David J. Rue, A Palynological Analysis of Human Impact in the Copan Valley
 1:20 Charles D. Cheek, Construction Activity and Sociocultural Integration at Copan
 1:40 Mary L. Spink, Exchange Systems in the Copan Area
 2:00 Richard M. Leventhal, Patio Clustering Within the Copan Valley
 2:20 Stephen L. Whittington, Rural-Urban Differences at Copan
 2:40 David L. Webster and AnnCorrine Freter, The Copan Rural Survey: Issues and Methods
 3:00 AnnCorrine Freter and David L. Webster, The Regional Differences in Late Classic Rural Settlements Within the Copan Area: The Sesesmil Versus Rio Amarillo
 3:20 John K. Mallory, Models of the Political Economy of Late Classic Period Copan
 3:40 William L. Fash, Evolution of the Copan Polity
 4:00 William T. Sanders, A Quantitative Measure of Urbanization at Copan
 4:20 Discussants: William A. Haviland and Gordon R. Willey

(2) General Session (continued): ARCHAEOLOGICAL THEORY, METHOD, AND TECHNIQUE

Silver

Chairperson: Michael B. Schiffer

Participants

- 1:00 M. Pamela Bumstead, Prehistory in the Nuclear Age
 1:20 Deborah Hondorf Johnson and Jeffery L. Andrews, Close-Range Terrestrial Photogrammetry: A Unique Mensuration Technique for Archaeology
 1:40 Fred E. Lukermann and Jennifer Moody, Archaeology: The Identification and Exploration of Probable Worlds
 2:00 Dolores Pipero, The Paleocological Significance of Phytolith Analysis: Data from the New World Tropics
 2:20 Shaune M. Skinner, An Examination of the Potential Use of Phosphorus of Soils as an Archaeological Survey Tool
 2:40 Richard G. Wilkinson, Prehistoric Health and Adaptation: Paradise Lost?
 3:00 Walter A. Dodd, The Composition of Gear Taken on Guarjio Trips
 3:20 David S. Whitley, Style, Style Areas, and Southern Sierra Nevada Pictographs
 3:40 Barbara Bocek, The Dynamics of Rodent Disturbances: Its Effect on Archeological Deposits
 4:00 Sharon L. Brock, Activity-Induced Shape Change in the Human Lower Limbs Through Time in the Prehistoric Southwest
 4:20 Kay Simpson, Intensive Artifact Inventory on Archaeological Survey
 4:40 Alice W. Portnoy, Experience Transfer from Engineering to Archaeology

(3) General Session (continued): ARCHAEOLOGICAL RESEARCH IN THE SOUTHWESTERN UNITED STATES

Grand Ballroom

Chairperson: Evan I. DeBloois

Participants

- 1:00 T. J. Ferguson, The Archaeology of Soil and Water Control on the Zuni Indian Reservation
 1:20 Robert W. Preucel, Settlement Pattern Succession on the Pajarito Plateau: Hudson's Model Revisited
 1:40 Anne C. Cully, Marcia L. Donaldson, Mollie S. Toll, and Klara B. Kelley, Estimating Prehistoric Agricultural Potential: An Interdisciplinary Approach
 2:00 Jonathan E. Reyman, The Burials of Chaco Canyon
 2:20 Thomas C. Winds and William Doleman, Small House Population Dynamics During the Bonito Phase in Chaco Canyon
 2:40 Robert P. Powers, Cultural Adaptive Variability at Chaco Canyon, New Mexico
 3:00 Bruce A. Bradley, Chacoan Archaeology in the Montezuma Valley, Southwest Colorado
 3:20 Steven D. Shelley, Bone Tool Technology From the Wallace Ruin, a Chaco Outlier Near Cortez, Colorado
 3:40 Richard H. Wilshusen, The Relationship Between Abandonment Mode and Artifact Assemblage in Pueblo I Anasazi Protokivas
 4:00 Ricky R. Lightfoot, Pueblo I Social Organization in Southwestern Colorado

- 4:20 Thomas R. Rocek, Spatial Variability and Social Variability: Analysis of Navajo Settlement Patterns
 4:40 Raymond P. Mauldin, Resource Acquisition and Mobility Strategies in Settlement Modeling

(4) Symposium (continued): REGIONAL PERSPECTIVES ON THE PLEISTOCENE PREHISTORY OF THE OLD WORLD

Beverly

Organizer and Chairperson: Olga Soffer

Participants

- 1:00 Geoffrey A. Clark, Climate, Resource Geography, and Paleoeconomy in Cantabrian Spain
 1:20 Michael Jochim, Late Pleistocene Refugia in Europe
 1:40 Gerd-C. Weniger, Man and Environment in the Late Glacial of Southwest Germany
 2:00 Olga Soffer, Upper Paleolithic Connubia, Refugia, and the Archaeological Record East of the Carpathians
 2:20 Geoff N. Bailey and Olive S. Gamble, Last Glacial Settlement Systems of Northwest Greece
 2:40 James L. Phillips, The Upper Paleolithic of Southern Sinai: A Regional Perspective
 3:00 Ofer Bar-Yosef, Boundary Situations During the Late Pleistocene and Early Holocene in the Levant
 3:20 John W. Olsen, Recent Developments in the Late Pleistocene Prehistory of China
 3:40 James F. O'Connell, Late Pleistocene Australian Prehistory: Overview and Comparison with Other Areas of the World
 4:00 Discussants: James A. Brown, George C. Frison, and Joachim Hahn

(9) Symposium: MOVING BEYOND MERE METHODS: ON THE RELATIONSHIP OF QUANTITATIVE METHODS AND ARCHAEOLOGICAL THEORY

Columbine

Organizer and Chairperson: Mark S. Aldenderfer

Participants

- 1:00 Dwight W. Read, Archaeological Theory and Statistical Methods: A Fundamental Discordance and a Possible Resolution
 1:20 Albertus Voorrips, On the Relationships of Formal Models and Archaeological Theory: The Outline of an Epistemology
 1:40 Larry Kimball, A Consideration of the Role of Quantitative Archaeology in Theory Construction
 2:00 Mark S. Aldenderfer, On the Quantitative Structure of Archaeological Data
 2:20 Keith W. Kintigh, Quantitative Approaches Well-Suited to Archaeological Problems
 2:40 Robert Whallon, Simple Statistics
 3:00 James A. Brown, Quantitative Comparative Analysis of Artifact Assemblages in Retrospect
 3:20 James E. Dorn, Computer Modeling in Archaeology
 3:40 Ishmael Williams and Christopher Carr, Intra-site Spatial Analysis: Goals and Units
 4:00 Jack D. Nance, Reliability, Validity, and Quantitative Methods in Archaeology
 4:20 Discussant: George L. Cowgill

(10) Symposium: TRANSFORMATION OF THE DOMESTIC ECONOMY WITHIN INKA CONQUEST OF THE MANTARO VALLEY

Assembly 1

Organizer and Chairperson: Timothy Earle

Participants

- 1:00 Anders Moya and Christine A. Hastorf, The Effect of Inka Economics on Northern Wanka Agricultural Production in the Central Peruvian Andes
 1:20 Elsie C. Sandefur, Animal Use in Andean Wanka-Inka Households: Changes in the Subsistence Economy
 1:40 Alex M. Castro and Cathy Lynne Costin, Specialization in Local State Ceramic Production in the Upper Mantaro Valley, Peru
 2:00 Melissa Billings Hagstrum, Stability in Village-level Specialization in the Upper Mantaro Valley, Peru

- 2:20 Glenn S. Russell, Lithic Evidence for Wanka Household Response to the Imposed Inka State Economy
 2:40 Timothy Earle, Contexts for Late Prehistoric Exchanges in the Andes
 3:00 Marilyn Norconk, A Functional Interpretation of Cranial Deformation from the Andes
 3:20 Terence D'Altroy, The Effects of the Inka Conquest on the Wanka Domestic Economy
 3:40 Discussants: Jeffery Parsons and Ramiro M. Matos

(11) General Session: RESEARCH IN ARCHAEOLOGICAL CERAMICS

Terrace
 Chairperson: Ray T. Matheny

Participants

- 1:00 Kenneth L. Brown, Temporal and Spatial Change in Pomona Ceramics, A Plains Village Variant in Eastern Kansas and Western Missouri
 1:20 Rodney E. Riggs, Ceramic Change in the Mid-Ohio Valley
 1:40 Steven E. Falconer, A Reconsideration of the Significance of Neutron Activation Data in Pottery Production/Distribution Studies
 2:00 Nancy L. Benco, Pottery Diversity and Political Centralization
 2:20 S. Eileen Goldborer, The Relationship of Reliance on and Intensity of Agriculture to the Presence of Pottery
 2:40 J. Richard Ambler, Ceramic Style Frequencies in the Kayenta Anasazi Region, Northern Arizona
 3:00 Lauri V. Slawson, Plain Ware: The Forgotten Artifacts?
 3:20 Amy A. Douglass, The Pottery of Rowe Ruin: A Test of the Northern Rio Grande Ceramic Sequence
 3:40 JoAnn E. Kisselburg, Hohokam Plainware at La Ciudad: Solving Site Specific Problems in Chronology and Community Pattern
 4:00 H. Wolcott Toll, The Nature and Implications of Ceramic Specialization in the Chaco Anasazi System
 4:20 Phil R. Geib and Martha M. Callahan, Ceramic Exchange in the Kayenta Anasazi Region

(12) Symposium: SHELL MIDDEN ANALYSIS

Denver
 Organizers and Chairpersons: David Sanger and Julie Stein

Participants

- 1:00 Julie K. Stein and G. Thomas Jones, Facies in Shell Middens
 1:20 J. Alan May, Recent Advances in Remote Sensing: The Use of Ground Penetrating Radar on a Contact Period Coastal Shell Midden
 1:40 Christopher L. Borstel, Quantifying Shell Middens Using a Visual Estimation Technique
 2:00 David C. Skinas, Shell Midden Site Formation
 2:20 Pamela J. Ford, Shellfish Harvesting and the Available Food Supply
 2:40 David R. Huelsbeck, Identification and Analysis of Faunal Remains: Short Cuts and Short Comings
 3:00 Keith R. Doms and Jay F. Custer, Seasonality Analysis of Prehistoric Oyster Utilization in the Upper Chesapeake and Delaware Estuaries, Atlantic Coast, Eastern U. S.
 3:20 Cheryl Claassen, Marking the Passage of Time in Shell Middens
 3:40 Douglas C. Kellogg, Paleoenvironmental Reconstruction of Coastal Geomorphology for Muscongus Bay, Maine
 4:00 Roy L. Carlson, Cultural-Historical Strategy and Shell Middens

THURSDAY EVENING, MAY 3, 1985**(13) Plenary Session: AMERICAN ARCHAEOLOGY IN THE EARLY YEARS OF THE SOCIETY**

Grand Ballroom
 Organizers: 50th Anniversary Committee
 Presentations: George C. Frison
 Moderator: Jeremy Sabloff

Participants

- 7:00 Panel Members: Frederika de Laguna, James B. Griffin, Emil W. Haury, Frederick Johnson, George I. Quimby, Albert C. Spaulding, Waldo R. Wedel, H. Marie Wormington

9:30 SOCIETY FOR AMERICAN ARCHAEOLOGY

Grand Ballroom Foyer
 Reception for 50th Anniversary Panel (cash bar)

FRIDAY MORNING, MAY 3, 1985**(14) Symposium: HISTORY AND STATE OF THE ART IN AMERICAN ARCHAEOLOGY, PART I: THEMES IN THE HISTORY OF ARCHAEOLOGY**

Grand Ballroom
 Organizers: 50th Anniversary Committee
 Chairperson: David J. Meltzer

Participants

- 8:00 Albert C. Spaulding, Archaeological Interpretation 1953
 8:30 Bruce G. Trigger, Archaeology and American Society
 9:00 Don D. Fowler, The Conservation Ethic in American Archaeology: An Historical Overview
 9:30 Donald K. Grayson, The European Influence on American Archaeology: The Search for our Earliest Ancestors
 10:00 William G. Haag, Field Methods in Archaeology
 10:30 Jacob W. Gruber, Culture and Archaeology: An Historical Retrospect
 11:00 Curtis M. Hinsley, Writing the History of American Archaeology

(15) Symposium: ARCHAEOLOGICAL SURVEY IN EUROPE: ACHIEVEMENTS AND PERSPECTIVES

Assembly 1
 Organizers and Chairpersons: John Chapman and Janet E. Levy

Participants

- 7:40 John Chapman, Archaeological Survey in Europe 8:20
 8:00 Nigel Mills, Survey in the Mediterranean Zone: Theory and Practice 8:40
 8:20 Antonio Gilman, Prehistoric Archaeological Survey in Southeast Spain 8:40
 8:40 Graeme Barker, Early State Formation in Italy: The Contribution of Archaeological Survey 9:20
 9:00 John L. Bintliff, Survey in Greece 9:30
 9:20 Andrew Sherratt, Area Survey and Regional Context 10:00
 9:40 Discussion
 10:00 Janet E. Levy, Survey and Settlement Pattern in Prehistoric Scandinavia 10:20
 10:20 Jens Lunig, Survey and Total Excavation 10:40
 10:40 Peter J. Fowler, Survey in Britain 11:00
 11:00 Stanton W. Green, James Moore, and Marek Zvelebil, Multi Stage Survey for Mesolithic and Neolithic Sites in Southeast Ireland 11:20
 11:20 John Cherry, Contributions of Archaeological Survey to European Prehistory 11:40
 11:40 Discussants: Carole L. Crumley and Robert J. Wenke.

STET
 9:00

11:40

12:00

(16) Symposium: CROSS-MEDIA: TECHNOLOGICAL AND SOCIAL APPROACHES TOWARD A GENERAL THEORY OF ARTIFACT STYLE

Junior Ballroom

Organizer and Chairperson: Christopher Carr

Participants

- 7:40 Christopher Carr, Toward a Synthetic Theory of Artifact Design
 8:00 Jerome A. Voss and Robert L. Young, Stylistic Change as a Function of Social Identity
 8:20 David P. Braun, Making an Impression: Illinois Middle Woodland Pottery Design and Social Interactions
 8:40 William K. MacDonald, Some Implications of Tattooing in Northern Luzon Philippines When the Probability of Archaeological Recovery is Effectively Zero
 9:00 C. Marshall Hoffman, Stylistic Variation in Lithic Tools: Constraints of Tool Manufacture, Maintenance, and Use
 9:20 Beryl Rosenthal, Innovation and Constraints: Factors Influencing Iroquois Carving Style
 9:40 Anita Cook and Hell Juel Jensen, Small Men and Big Questions: The Role of Carved Figurines in the Huari State
 10:00 Katheryn A. King, Southeastern Middle Woodland Ear, spoils of the Hopewell Period
 10:20 Robert F. Maslowski, Cordage, Knots, and Netting: Technological Approaches to Ethnicity and Cultural Stability
 10:40 James M. Adovasio, Style, Basketry, and Basketmakers: Another Look
 11:00 S. Terry Childs, Technology and Ideology in Artifact Design of Early Iron Age Refractories in Iron Smelting
 11:20 Dorothy Hosler, The Cultural Structuring of Technology: Copper Alloys in Ancient West Mexico
 11:40 Discussants: Margaret Conkey and Edwin N. Wilmsen

(17) Symposium: EVOLUTIONARY APPROACHES TO THE STUDY OF HUMAN DIVERSITY

Columbine

Organizers and Chairpersons: Sara J. Studenmund and Terry L. Hunt

Participants

- 8:00 Sara J. Studenmund and Terry L. Hunt, Introduction to the Symposium
 8:15 Peter J. Richarson and Robert Boyd, The Evolution of Symbolic Culture Traits
 8:30 L. L. Cavalli-Sforza, Population and Individual Movement
 8:45 John E. Terrell, Causal Pathways and Causal Process: A Populationist View of Human Diversity in Time and Space
 9:00 Mildred Dickemann, Natural Disturbance and Human Response in Evolutionary Reconstruction
 9:15 Sara J. Studemund, Implications of Population Thinking and Middle Range Theory
 9:30 Charlotte L. Benson, Residential Mobility in the Evolution of Non-Egalitarian Societies
 9:45 Michael W. Graves, The Tempo and Nature of Evolutionary Change in Contrastive Environments
 10:00 Patrick V. Kirch, Divergent Evolution in Polynesia
 10:15 Terry L. Hunt, Social Complexity and Hawaiian Prehistory: Is an Evolutionary Understanding Possible?
 10:30 Margaret C. Trachte, Understanding Variability in Eastern North American Agriculture
 10:45 Fran H. Whittaker, Subsistence From an Evolutionary Perspective
 11:00 Kevin T. Jones, Hunters or Scavengers? Evolutionary Theory as a Tool for Identifying and Explaining Prehistoric Behavior
 11:15 Donald L. Hardesty, Evolutionary Thinking in Historical Archaeology: Suggestions from the Industrial Frontier
 11:30 David Rindos, Darwin's Essay of 1844 and Evolutionary Theory in Anthropology
 11:45 Discussants: Bruce Winterhalder and Niles Eldredge

(18) Symposium: ASSESSING THE IMPACT OF FEDERAL ARCHAEOLOGY

Beverly

Organizer and Chairperson: Alan S. Downer

Participants

- 7:40 Dena F. Dencauze and David M. Lacy, Hardscrabble Archaeology: The Northeast Under Federal Mandates
 8:00 William M. Gardner, Federal Funding and Middle Atlantic Archaeology
 8:20 Vincas P. Stephonaitis, The Achievements of Contract Archaeology in the Southeastern U. S. Since 1970
 8:40 Jefferson Chapman, Fifty Years of Federal Archaeology in the Middle South: An Assessment
 9:00 W. Raymond Wood and Michael J. O'Brien, The Impact of Federal Archaeology in the American Midwest
 9:20 Robert Alex, Federal Archaeology in the Northern Plains: 1945-1985
 9:40 Don G. Wycoff, The Good, The Bad, and The Ugly: The Impacts of Federal Archaeology in Oklahoma
 10:00 David E. Doyel and Frank Fryman, Federal Archaeology in the American Southwest
 10:20 Michael J. Moratto, Federal Involvement in California Archaeology, 1945-1985
 10:40 Wendy H. Arundale, The Impact of Federal Archaeology in Alaska
 11:00 Alan H. Downer, The Contribution of Contract Archaeology: A Citation Analysis
 11:20 A. E. Rogge, Archaeology as Big Science
 11:40 Bennie C. Keel, Assessing the Effects of the Federal Archaeology Program: A Federal Perspective
 12:00 Discussants: Thomas F. King and Richard B. Woodbury

(19) Symposium: ETHNOBOTANY: NEW PERSPECTIVES ON OLD PROBLEMS

Terrace

Organizers and Chairpersons: Bruce F. Benz and L. Anthony Zalucha

Participants

- 8:00 Kate Aasen, Pollen, Macrofossil, and Charcoal Analysis of Basketmaker Coprolites from Turkey Pen Ruin, Utah
 8:20 Karen H. Clary, Accumulated Data: Pollen Analysis and Anasazi Subsistence in the Four Corners Area, American Southwest
 8:40 Robert E. Gasser, Trash Pits and Floor Features: Don't Believe Everything
 9:00 Meredith H. Matthews and Timothy A. Kohler, Change in Prehistoric Wood Resource Use: Evaluation of Two Procurement Strategy Models
 9:20 L. Anthony Zalucha, Vegetational Reconstruction Based on Charcoal
 9:40 Thomas W. Haberman, Frequency of Corn: Toward Assessing the Relative Importance of Horticulture
 10:00 Constance M. Arzigian, Paleoethnobotany of the Aztalan and Fred Edwards Sites: Late Woodland/Middle Mississippian Interaction in Southern Wisconsin
 10:20 Bruce F. Benz and Hugh H. Iltis, Maize Ear Morphology: Racial Variation in Mexico
 10:40 Cathy J. Crane, Economy and Ecology at Cerros, a Late Preclassic Maya Site
 11:00 Margaret Houston, Paleoethnobotany and Inferences about Complex Society in Oaxaca, Mexico
 11:20 Amie Limon, Javier Gonzalez and Judith Zurita, Flotation, Pollen and Phytoliths: How to Make it Work, an Interdisciplinary Approach
 11:40 Discussants: David Baeris, Richard I. Ford, and Lawrence Kaplan

(20) Symposium: CULTURAL ADJUSTMENTS IN MESOAMERICA DURING AND AFTER THE DECLINE OF TEOTIHUACAN

Silver

Organizer and Chairperson: Richard A. Diehl

Participants

- 8:00 Richard A. Diehl, Teotihuacan's Demise and Its Aftermath in Central Mexico
 8:20 Kenneth Hirth, Epiclassic Militarism and Social Organization at Xochicalco, Morelos
 8:40 Janet C. Berlo, Writing in Central Mexico: A.D. 700-900
 9:00 Ellen T. Baird, Stars and War at Cacaxtla
 9:20 Debra Nagao, Epiclassic Interaction: Eclecticism and Exchange at Cacaxtla and Xochicalco
 9:40 Robert S. Santley, Janet M. Kerley, and Raul Olivares, The Structure of the Classic Period Obsidian Procurement Distribution System at Matacapán, Tuxtla Region, Veracruz, Mexico

- 10:00 Joseph W. Ball, Teotihuacan's Fall and the Rise of the Itza: Realignment and Role Changes in the Terminal Classic Maya Lowlands
 10:20 Jeff Kowalski, Connections between Northern Yucatan, the Pasion Drainage and Highland Chiapas-Guatemala During the Terminal Classic
 10:40 Discussant: William T. Sanders

(21) Symposium: MAYA ARCHAEOLOGY IN THE EASTERN PERIPHERY OF THE CENTRAL LOWLANDS FROM PRECLASSIC TO SPANISH COLONIAL TIMES

Denver

Organizers and Chairpersons: Anabel Ford and Elizabeth Graham

Participants

- 8:00 Anabel Ford and Maureen Carpenter, Belize Valley Maya Settlement Pattern Chronology and the Implications for the Development of the Central Maya Lowlands
 8:15 Scott L. Fedick, Prehistoric Land Use Patterns in the Upper Belize River Valley
 8:30 Jennifer T. Taschek, Late Classic Rural Domestic Architecture in the Upper Belize Valley
 8:45 Richalene Kelsay, A Late Classic Lithic Finishing Station at Buena Vista, Belize
 9:00 Elizabeth Graham, An Overview of Postclassic to Historic Period Settlement at Negroman-Tipu
 9:15 Prudence M. Rice, Postclassic and Historic Period Pottery from Negroman-Tipu
 9:30 Discussant: Gordon R. Willey
 9:45 Break
 10:00 Mark Cohen, Sharon Bennett, Carl Armstrong, Marie Danforth, The Colonial Period Skeletal Population from Tipu
 10:15 Diane Z. Chase, On the Frontier of the New Empire: Protohistoric Santa Rita Corozal in Perspective
 10:30 David M. Pendergast, The Terminal Postclassic and Early Historic Community at Lamanai
 10:45 Arlen F. Chase, From the Outside Looking In: Peten Perspectives on Belize
 11:00 Grant Jones, Mayas and Spaniards in 16th Century Belize: Foundations of a Frontier Colony
 11:15 Discussant: Anthony P. Andrews

10:00 THE DARCOM ARCHAEOLOGICAL OVERVIEW AND MANAGEMENT PLANNING PROJECT 1982-85:

Summary and Assessment

Cedar

Public invited

11:30 SOCIETY FOR AMERICAN ARCHAEOLOGY

Gold

Presidents Club Luncheon

12:00 SOCIETY OF PROFESSIONAL ARCHAEOLOGISTS

Spruce

Annual Business Meeting

12:00 PANEL ON ARCHAEOLOGICAL GRANTS

DENVER

Representatives from agencies which fund archaeological projects will discuss their guidelines and answer questions.

FRIDAY AFTERNOON, MAY 3, 1985

2:00 ADVISORY COUNCIL WORKSHOP

Cedar

(14) Symposium (continued) HISTORY AND STATE OF THE ART IN AMERICAN ARCHAEOLOGY, PART II: THE STATE OF THE ART IN CONTEMPORARY ARCHAEOLOGY

Grand Ballroom

Organizers: 50th Anniversary Committee

Chairperson: David J. Meltzer

Participants

- 1:00 Patty Jo Watson, Archaeological Interpretation 1985
 1:30 Ruthann Knudson, Archaeology in Contemporary Cultural Resource Management
 2:00 David H. Thomas, Hunter-Gatherer Studies
 2:30 Barbara L. Stark, The Study of the Origins of Agriculture
 3:00 Henry T. Wright III, The Evolution of Civilization
 3:30 George L. Cowgill, Quantitative Methods
 4:00 Mark P. Leone, Symbolic and Structural Archaeology

(22) Symposium: SOME DEVELOPMENTS IN CANADIAN ARCHAEOLOGY

Columbine

Organizer and Chairperson: J. V. Wright

Participants

- 1:00 James A. Tuck, Archaeology in Atlantic Canada
 1:20 Robert McGhee, Current Problems in Canadian Arctic Prehistory
 1:40 B. O. K. Reeves, Canadian Plains Archaeology: The First Fifty Years
 2:00 Knut R. Fladmark, The Archaeology of British Columbia, 1970-1985
 2:20 Jacques Cinq-Mars, Eastern Beringian Prehistory: A Changing Search for Models
 2:40 J. V. Wright, Archaeological Cartography and the Historical Atlas of Canada
 3:00 James M. Saville, Thule Eskimo Settlement-Subsistence Strategies in the Central Canadian Arctic

(23) Symposium: STYLISTIC PATTERNING IN REGIONAL SYSTEMS OF INTERACTION

Junior Ballroom

Organizer and Chairperson: Jill Neitzel

Participants

- 1:00 John H. Pryor, Toward an understanding of Style: Contextualization of Northern California Indian Basketry
 1:20 Jeffery L. Hantman, Boundary Dynamics Among Prehistoric Hunters-Gatherers in the Eastern United States
 1:40 Robert Thunen and James A. Brown, Is There Cultural Interaction without Trade?
 2:00 Jon Muller, Mississippian Art and Specialization
 2:20 Fred Plog, Regional Styles and Punctuated Equilibrium Models
 2:40 Jill Neitzel, Regional Styles and Organizational Hierarchies: The View from Chaco Canyon
 3:00 Stephen Plog, Structure, Form, and Content in Southwestern Design Styles
 3:30 Claudia B. Hemphill, Ecology, Ethnicity, and Interaction in the Western Arctic
 3:40 Discussant: Gary Feinman

(24) Symposium: SETTLEMENT PLANS: THE SPATIAL ORGANIZATION OF SMALL COMMUNITIES

Denver

Organizer and Chairperson: Lynne A. Peters

Participants

- 1:00 Gerald A. Oetelaar, Settlement Plans, Environmental Constraints, and Refuse Disposal Patterns
 1:20 Jeanette E. Stephens, Settlement Plan and Community Interaction
 1:40 Lynne A. Peters, Social Differentiation in Settlement Plans: Lessons from the Dead
 2:00 Dana B. Oswald, The Spatial Expression of Socio-Economic Behavior
 2:20 Katharine W. Fernstrom, Manipulating Energy: The Spatial Organization of Exchange Facilities
 2:40 Barbara E. Cohen, Measured in Metaphors: Settlement Plan and the Perception of Space
 3:00 Michael L. Hargrave, Settlement Plan Standardization and Community Integration: The Black Mesa Anasazi
 3:20 James Carucci, Settlement Reorganization in an Inhabited Palsaan Village

- 3:40 Barbara S. Ottaway, Excavations of Neolithic Settlements in Southern Germany
 4:00 Discussants: Patricia A. Gilman and Michael E. Whalen

(25) Symposium: SOCIETY FOR AMERICAN ARCHAEOLOGY REGIONAL CONFERENCES

Beverly

Organizers and Chairpersons: Don D. Fowler and Cynthia Irwin-Williams

Participants

- 1:00 Bert Salwen, Regional Conference Results from the Northeast
 1:20 J. Ned Woodall, Regional Conference Results from the Southeast
 1:40 Cheryl Munson and David Brose, Regional Conference Results from the Midwest
 2:00 David Brose and Cheryl Munson, Regional Conference Results from the Midwest
 2:20 Dale Henning, Regional Conference Results from the Great Plains
 2:40 R. Gwinn Vivian, Regional Conference Results from the Southwest
 3:00 C. Melvin Aikens, Regional Conference Results from the Great Basin
 3:20 David Frederickson, Regional Conference Results from California
 3:40 Garland Grabert, Regional Conference Results from the Northwest
 4:00 William Workman, Regional Conference Results from Alaska and North Canada
 4:20 Discussants: Thomas Green and Joyce Bath

(26) Symposium: ISSUES IN ARCHAEOLOGICAL SURFACE SURVEY: MESHING METHOD AND THEORY

Assembly 1

Organizers and Chairpersons: James I Ebert and LuAnn Wandsnider

Participants

- 1:00 James I. Ebert, Modeling Human Systems and "Predicting" the Archaeological Record: Unavoidable Links Between Theory and Method
 1:20 William S. Dancy, Archaeological Survey in Central Ohio: The 1970s
 1:40 Michael B. Schiffer, What You See Is What You Get: Is Surface Survey Sufficient for CRM?
 2:00 LuAnn Wandsnider, Geomorphological Processes and the Integrity of Archaeological Remains in Dune Fields
 2:20 Michael J. O'Brien, Intensive Surface Collection and Sample Excavation of a Middle Woodland Havana Community
 2:40 Robert C. Dunnell, The Interpretation of Low Density Archaeological Records From Plowed Surfaces
 3:00 Signa L. Larralde, Surface Distributions and Chronological Control
 3:20 Cynthia Irwin-Williams, Archaeological Units and Human Activities in the Southwest Archaic
 3:40 Eileen L. Camilli, Prehistoric Use of Landscapes and the Archaeological Surface Distribution
 4:00 Discussant: Lewis R. Binford

(27) Symposium: THE BEHAVIORAL IMPLICATIONS OF CERAMICS

Terrace

Organizers and Chairpersons: Matthew F. Schmader and Philip J. Arnold, III

Participants

- 1:00 William A. Longacre, Ceramic Ethnoarchaeology: An Overview
 1:20 Robert M. Hill II, Pottery Production and Change: Models From Ethnography and Ethnohistory
 1:40 Philip J. Arnold, III, Specialization and "Spacialization": The Archaeology of Ceramic Production
 2:00 Karen Toor, Ethnoarchaeology of Ceramics in Upper Egyptian Villages
 2:20 Barbara J. Mills, "North American Cooking Pots" Reconsidered: Some Behavioral Implications of Variation in Cooking Pot Morphology
 2:40 Discussant: Carol Kramer
 3:00 Ronald Kneebone and Christopher Pool, Archaeological Investigations of Intensive Ceramic Production: A Recent Discovery at Comoapan, Veracruz, Mexico

- 3:20 Jonathan E. Ericson, Behavioral Implications of Decoupling Ceramic Design Variability and Marital Residence Patterns by Strontium Isotope Characterization
 3:40 Matthew F. Schmader, Variability in Ceramic Function and Assemblages
 4:00 Gary Shapiro, Ceramic Vessels and Site Variability
 4:20 David J. Hally, Identifying Vessel Function: What the Archaeological Evidence Doesn't Tell Us
 4:40 Discussant: Prudence Rice

(28) General Session: ARCHAEOLOGICAL RESEARCH IN LATIN AMERICA

Silver

Chairperson: Thomas A. Lee

Participants

- 1:00 Alfred H. Siemens and Mario Navarette, Vestiges of Field Systems in Subhumid Central Veracruz
 1:20 Thomas K. Killion, Infield Gardening Practices in the Sierra de los Tuxtlas: Building a Foundation for Archaeological Inference
 1:40 Helen P. Pollard, The Political Economy of Prehispanic Tarascan Mining
 2:00 Joseph B. Mountjoy, West Mexican Stone Stelae From Jalisco and Nayarit
 2:20 Richard H. Books, Michael S. Foster, and Sheilagh Brooks, Observed Mortuary Practices From La Cueva de los Muertos Chiquitos, Near Zape Chico, Durango, Mexico
 2:40 Melvin L. Fowler, William I. Woods, and Christy L. Wells, A Formative Period Water Control System at the Amaluacan Site Puebla, Mexico
 3:00 Susan T. Evans, Siguatecpan: An Aztec Period Rural Village in the Teotihuacan Valley
 3:20 Leoncio A. Garza-Valdes and Gary Rex Walters, Chromium Chalcedony: The Mesoamerican Emerald
 3:40 Donald McVicker, The Transition from Archaeological Explorations to Archaeological Research: Frederick Starr in Mexico 1894-1904
 4:00 Karen Wise and Mark Aldenderfer, Pre-ceramic Puna-Sierra Interrelationships in the South-central Andes
 4:20 David L. Bowman, Economic Models in the Pre-Incaic Andean State
 4:40 Michael A. Malpass, Late Prehistoric Agricultural Terracing in the Colca Valley, Peru: Preliminary Report

FRIDAY EVENING MAY 3, 1985

(29) Plenary Session: VIEWS OF THE DEVELOPMENT OF AMERICAN ARCHAEOLOGY

Grand Ballroom

Organizers: 50th Anniversary Committee

Chairperson: Don D. Fowler

Participants

- 7:00 Jesse D. Jennings, American Archaeology, 1930-1980: One Person's View
 7:45 Lewis R. Binford, American Archaeology: In Pursuit of the Future
 8:30 Robert C. Dunnell, Five Decades of American Archaeology: A Critical Analysis
 9:30 **SOCIETY FOR AMERICAN ARCHAEOLOGY**

Grand Ballroom Foyer

Open Reception Honoring Past Officers and Executive Committee Members of the Society (cash bar)

SATURDAY MORNING, MAY 4, 1985

(30) General Session: RESEARCH IN HISTORIC ARCHAEOLOGY AND NATIVE AMERICANS

Denver

Chairperson: Edward Staski

Participants

- 7:40 William B. Lees, Perspectives on the Development of Historical Archaeology on the Great Plains
- 8:00 David M. Gradwohl and Nancy M. Osborn, In Pursuit of the Coal Miner's Daughter: Interpretation of Excavated Features at the Buxton, Iowa, Townsite
- 8:20 Christine R. Szuter, Domestic Animals, Trading Posts, and the American Frontier: An Ethnohistorical and Faunal Analysis at the Hubbell Trading Post
- 8:40 Kenneth L. Brown, Randolph Widmer, and Marylinda Govaars, Urban Archaeology and History in a Twilight Zone: 13 Blocks on the Edge of Downtown Houston, Texas
- 9:00 James Stute and Julie Hoff, Camp Miller: The Excavation and Interpretation of an 1867 Army Field Camp in Arizona
- 9:20 Anthony L. Klesert and H. Barry Holt, Archaeologists, Native Americans, and Archaeology on Indian Lands
- 9:40 Michael J. Andrews, and Anthony L. Klesert, Disposition of Human Remains on Navajo Lands: Proposed Procedures

(31) Symposium: EARLY MAN IN SOUTH AMERICA

Junior Ballroom
Organizer and Chairperson: Alan L. Bryan

Participants

- 7:40 Tom D. Dillehay, The Early Pebble Tool Culture at Monte Verde, Chile
- 8:00 Gustavo Politis, The Early Man Site of Arroyo Seco, Argentine Pampa
- 8:20 Wesley R. Hurt Jr., Late Pleistocene Sites from Eastern Brazil
- 8:40 Ruth Gruhn, Association of Artifacts with Extinct Fauna in Two Caverns in Interior Bahia, Brazil
- 9:00 Niede Guidon, Early Man in Piaui, Brazil
- 9:20 Discussants: Alan L. Bryan and Thomas F. Lynch

(32) General Session: ARCHAEOLOGICAL RESEARCH ON THE GREAT PLAINS

Assembly I
Chairperson: Ernestine Green

Participants

- 7:40 R. L. Andrews, J. M. Adovasio, R. C. Carlisle, G. C. Frison, and R. Edgar, A Prehistoric Net from Sheep Mountain, Wyoming: Analysis, Comparisons, and Implications
- 8:00 Patricia J. O'Brien, Searching for Morning Star
- 8:20 Timothy Weston, Acculturation in the Upper Middle Missouri Valley as Reflected in Bone Tool Assemblages
- 8:40 Susan J. Bender and Gary A. Wright, The Adaptive Role of the Mountains in High Plains Prehistory: A Reassessment of the Refugium Hypothesis
- 9:00 Brad Logan, Modeling Paleoenvironments and Cultural Change in the Lower Kansas River Basin
- 9:20 Elizabeth Ann Morris and William J. Litzinger, Analysis of Floor Samples from a Hogback Phase, Early Ceramic Period, House at the Kinney Spring Site (5LR144c), North-Central, Colorado
- 9:40 David V. Burley, Problems and Prospects of Tipi Ring Research Within Alberta

(33) General Session: ARCHAEOLOGICAL RESEARCH IN THE EASTERN WOODLANDS

Terrace
Chairperson: Diane Gelburd

Participants

- 7:40 Donna C. Roper, A Consideration of Woodland Settlement Variability in the Prairie Peninsula
- 8:00 Thomas W. Neumann, Late Archaic-Middle Woodland Occupations in Southeastern Minnesota
- 8:20 James Schoenwetter, Methodology and Maize Pollen
- 8:40 Cynthia A. Thayer, Nathan D. Hamilton and James B. Petersen, Geoarchaeology of the Brigham Site: A Sequence of Holocene Deposition from Northern New England

- 9:00 James B. Petersen, Nathan D. Hamilton and Arthur E. Spiess, Excavations at the Brigham Site: A Holocene Occupational Sequence from Northern New England
- 9:20 George R. Milner, Mississippian Period Cultural and Demographic Transformations in the Cahokia Area of West-Central Illinois
- 9:40 Douglas K. Charles, Systemic Evolutionary Interpretation of Woodland Burial Practices in West-Central Illinois

(34) General Session: ARCHAEOLOGICAL RESEARCH IN THE SOUTHEASTERN UNITED STATES

Beverly
Chairperson: Gabriel DeCicco

Participants

- 7:40 H. Blaine Ensor, Lithic Craft Specialization in the Southeast: Data from the Lubbock Creek Locality
- 8:00 Leslie E. Eisenberg, New Perspectives on Mississippian Adaptation, Subsistence and Settlement in the Southeastern United States
- 8:20 Mary L. Powell, Biological and Social Dimensions of Community Health at Moundville
- 8:40 J. Mark Williams, Beyond Environmental Explanations of Site Location: The Little River Site in the Oconee Province
- 9:00 Robert C. Mainfort, Pinson Mounds: Internal Chronology and External Relationships
- 9:20 George Sabo, Mound-Building as Material Symbolism: An Example from the Western Ozark Highland
- 9:40 H. Edwin Jackson, Prehistoric Hunting-Gathering Societies and Sedentism in the Archaeological Record

(35) General Session: ARCHAEOLOGICAL RESEARCH IN THE PALEOINDIAN PERIOD

Columbine
Chairperson: Patricia M. Spoerl

Participants

- 7:40 Peter H. McCartney, Alternative Hunting Strategies in Plains PaleoIndian Adaptations
- 8:00 Ronald I. Dorn and Douglas B. Bamforth, The Nature and Antiquity of the Manix Lake Industry
- 8:20 Robert E. Ackerman, Late Pleistocene/Early Holocene Archaeology of Southwestern Alaska with Implications for Eastern Beringia
- 8:40 Victoria A. Dirst, Wisconsin's PaleoIndians
- 9:00 Judith A. Wellig, PaleoIndian Occupation in the Alkali Lake Basin of South-central Oregon: A Geoarchaeological Model of Early Postglacial Human Adaptation
- 9:20 Michael R. Waters, The Sulphur Spring Phase and Early New World Prehistory

(36) General Session: ARCHAEOLOGICAL RESEARCH ON HUNTERS AND GATHERERS

Silver
Chairperson: Shirley Powell

Participants

- 7:40 William G. Buckles, Abstract Western Archaic Rock Art: Chronological and Behavioral Propositions
- 8:00 M. Steven Shackley, Lithic Raw Material Procurement and Archaic Mobility Strategies in East-Central Arizona
- 8:20 Wirt H. Wills, Hunter-Gatherer Organization and Early Agriculture in the Southwestern United States
- 8:40 Mary Lou Larson, Changing Site Function on the Northwest Plains
- 9:00 Jack L. Hofman, Hunter-Gatherer Mortuary Variability: The Impact of Mobility
- 9:20 Lynn E. Christenson, Paleoecological Modeling of Fire Adaptations by Hunters and Gatherers in Southern California
- 9:40 Mark Q. Sutton, On the Numic Expansion: Data from the Ethnographic Period

(37) Symposium: GETTING FOOD WITHOUT FARMING: ACTUALISTIC HABITAT STUDIES THAT INFORM ARCHAEOLOGY

Grand Ballroom
Organizer and Chairperson: Glynn Ll. Isaac

Participants

- 7:40 Jeanne M. Sept, Eden's Forbidden Fruit? Plant Food Foraging Opportunities in East African Habitats
- 8:00 Anne C. Vincent, Ecology of Root Use in Northern Tanzania
- 8:20 Charles R. Peters, Nuts as Resources for African Hominids
- 8:40 John F. Noss, Mapping Resources and Human Activities in Alaska
- 9:00 Thomas E. Gillispie and John F. Noss, Optimal Foraging in Diachronic Perspective: A Case Study from Interior Alaska
- 9:20 Robert J. Blumenschine, Scavenging Opportunity in the Serengeti and Ngorongoro Ecosystems
- 10:00 **SOCIETY FOR AMERICAN ARCHAEOLOGY**
Grand Ballroom
Annual Business Meeting

SATURDAY AFTERNOON MAY 4, 1985**1:00 SOCIETY FOR AMERICAN ARCHAEOLOGY**

Gold
Executive Committee Meeting

1:30 SOCIETY OF PROFESSIONAL ARCHEOLOGISTS

Cedar
Board of Directors Meeting

(38) Symposium: ARCHAIC HUNTER-GATHERER ARCHAEOLOGY IN THE NORTHERN SOUTHWEST

Silver
Organizer and Chairperson: Bradley J. Vierra

Participants

- 1:00 Bradley J. Vierra, Archaic Hunter-Gatherer Mobility Strategies in Northwestern New Mexico
- 1:20 Ruth W. Henderson, Jay Settlement-Subsistence Systems in the Gallegos Mesa Area, Northwestern New Mexico
- 1:40 Patrick Hogan, Foragers to Farmers: The Adoption of Agriculture in the Northern Southwest
- 2:00 Patricia A. Hicks, Dating the Undiagnostic Lithic Scatter Through the Use of Patterned Changes in Debitage Attributes
- 2:20 Roger A. Moore, Archaic Projectile Point Typology/Chronology in the Four Corners Area
- 2:40 William H. Doleman, Quantitative Methods in the Study of Inter-Assemblage Variability
- 3:00 William J. Parry, Galen R. Burgett, and F. E. Smiley, The Archaic Occupation of Northern Black Mesa, Arizona
- 3:20 Terry A. Del Bene and William Branchard, What Mean These Cheno-Ams? Archaic Period Adaptations in Northwestern New Mexico as Evidenced on the Navajo Indian Irrigation Project
- 3:40 Anne C. Cully and Mollie S. Toll, Archaic Subsistence and Seasonal Population Flow, Northwestern New Mexico
- 4:00 Richard C. Chapman, Analysis of Southwestern Archaic Lithic Technology: A Ten Year Review
- 4:20 F. L. Nials, Geological Evaluation of Archaic Sites Located in Aeolian Depositional Environments
- 4:40 Discussants: Cynthia Irwin-Williams and Lewis R. Binford

(39) Symposium: DEMOGRAPHY OF THE MAYA LOWLANDS

Junior Ballroom
Organizer and Chairperson: T. Patrick Culbert

Participants

- 1:00 Patricia A. McNaney, The Effect of Chultuns on Household Configurations and Settlement Patterns At Sayil, Yucatan
- 1:20 Anne Pyburn, Demographic Implications of Non-Mound Occupation at Nohmul, Belize
- 1:40 Norman Hammond and Anne Pyburn, Country Cousins: Demographic and Dynamic Aspects of Settlement at Nohmul, Belize
- 2:00 T. Patrick Culbert and Laura J. Kosakowsky, The Demography of Central Tikal
- 2:20 Don S. Rice and Prudence M. Rice, Settlement Dynamics in the Central Peten Lakes Region, Guatemala
- 2:40 Robert E. Fry, Disjunctive Growth in the Maya Lowlands
- 3:00 Peter D. Harrison, A Hop, A Skip, and A Jump: Regularity of Maya Intersite Spacing
- 3:20 Sara Donaghey and Norman Hammond, Excavation and Research at Nohmul, Belize, 1985
- 3:40 Discussant: Robert S. Santley

(40) General Session: RESEARCH REPORTS

Terrace
Chairperson: Linda S. Cordell

Participants

- 1:00 Bruce B. Huckell and Lisa W. Huckell, New Light on the Late Archaic Period of the Southern Southwest
- 1:10 Kenneth J. Lord, Archaeological Research in Southeastern New Mexico: The WIPP
- 1:20 J. Holly Hathaway, Jeffrey L. Eighmy, T. Kathleen Henderson, and Randall H. McGuire, Archeomagnetic Paleopole Locations from South-central Arizona: Additional Data for the 900-1100 Portion of the Southwest Master VGP Curve
- 1:30 Kathryn A. Kamp and John C. Whittaker, Small Site Economic Integration Among the Sinagua
- 1:40 Janet R. Balsom, Application of Heavy Mineral Analysis to Anasazi Ceramics in Grand Canyon
- 1:50 E. Charles Adams, Sand Canyon Pueblo: A Thirteenth Century Anasazi Ceremonial Center in Southwestern Colorado
- 2:00 David L. Carlson, Archaic and Later Prehistoric Adaptations to the Central Texas Uplands: Results From Recent Surveys at Fort Hood
- 2:10 Henry C. Koerper, John S. Killingley, and R. E. Taylor, Isotopic Evidence for Southern California Paleoenvironment During the Little Ice Age
- 2:20 Ann F. Ramenofsky and Ann M. Whitmer, Seed Blower Experiments in Separating Small-scale Archaeological Samples
- 2:30 Elizabeth J. Misner and Marsha Chance, Intersite Variability of an Archaic Lithic Procurement Site in Central Florida
- 2:40 Richard E. Ross and Crystal Schreindorfer, An Early Interior Site in Southwestern Oregon
- 2:50 Dennis Griffin, Prehistoric Utilization of Thermal Springs in the Pacific Northwest
- 3:00 Robert D. Kuhn, Trace Element Analysis of Ceramics as a Means of Studying Late Woodland Interaction Systems in New York State
- 3:10 Monica M. Bargielski and Robert L. Rands, Color and Paste Compositional Relationships in Maya Ceramics: Palenque, Mexico
- 3:20 Charles A. Hoffman and John Winter, A Chronological Anchor for Palmetto Ware in the Bahamas
- 3:30 C. Earle Smith and David Lentz, A Lowland Tropical Dietary Pattern
- 3:40 Helen C. M. Keeley, Agricultural Field Systems in the Rio Salado Basin, Northern Chile
- 3:50 Brian S. Bauer, The Paqarectambo Project: An Interim Report
- 4:00 Barbara A. Hall, Household Economy and Refuse at Matacapán, Veracruz, Mexico
- 4:10 Mark F. Baumler, A Technological Analysis of Flake Production at the Middle Paleolithic Site of Zobiste in Central Yugoslavia
- 4:20 Parl Grebinger, In a Button: Material Reflections of Early American Culture
- 4:30 Evelyn C. Rattray, The 1983-1984 Excavations at the Merchants' Barrio, Teotihuacan

(41) Symposium: ADVANCES IN COMPUTER TECHNIQUES

Denver
Organizer and Chairperson: Sylvia W. Gaines

Participants

- 1:00 Sylvia W. Gaines, Are PCs the Answer? A Look at Some Problems and Issues
 1:20 Ian R. Johnson, Geographical Plotting with the MINARK Database System
 1:40 David V. M. Stephen, Microcomputers in Archaeological Research
 2:00 Helen L. O'Brien, and Charles L. Redman The Microcomputer: An Effective Field Tool?
 2:20 Tom Korsmo and Fred Plog, Computer Applications in the Field and Lab
 2:40 Stephen R. Durand and Jonathan O. Davis, Archaeological Data Analysis and the Microcomputer: Problems and Potentials
 3:00 W. Fredrick Limp and Sandra Parker, Interfacing the Stone: Building a Computerized Archaeological Infrastructure
 3:20 Sandra Parker, Christopher Peebles and Victor A. Carbonne, A Design for a National Cultural Resource Database
 3:40 Discussant: Walter Waite

(42) Symposium: ECONOMIC PREHISTORY OF THE CENTRAL ANDES**Beverly**

Organizers and Chairpersons: Jane C. Wheeler and Elizabeth S. Wing

Participants

- 1:00 Robert Mck. Bird, Archaeobotany of the North Coast Preceramic: Huaca Prieta
 1:20 Diana G. Matthiesen, Preceramic Animal Utilization on the North Coast of Peru
 1:40 Shelia Pozorski and Thomas Pozorski, Late Preceramic Through Early Horizon Subsistence in the Casma Valley
 2:00 Glendon H. Weir, Preceramic Plant Utilization on the Central Coast of Peru: The Lomas of Paloma
 2:20 Elizabeth J. Reitz, Preceramic Animal Utilization on the Central Coast of Peru
 2:40 Michael J. DeNiro, Marine Food Sources for Coastal Peruvian Camelids: Evidence and Implications
 3:00 Daniel H. Sandweiss, Occupational Specialization on the Late Prehistoric Andean Coast
 3:20 Melody Shimada, Zooarchaeology of the Northern Highlands of Peru: Early Horizon to Late Intermediate
 3:40 Lawrence Kaplan, Elizabeth Bonnier, and Catherine Rozenberg, Archaeological Botany of the Central Highlands Site of Tantamayo: Late Preceramic to Early Horizon
 4:00 Jane C. Wheeler and Edward B. Dwyer, Animal Utilization in the Southern Highlands: Early Horizon to Early Intermediate
 4:20 Katherine M. Moore, Hunting and Herding Economies on the Junin Puna: Recent Paleoethnozoological Research
 4:40 Elizabeth S. Wing, Use of Animals by the Inca with Special Reference to Huanaco Pampa
 5:00 Discussants: Barbara Pickergill, Brian Hesse, and Thomas F. Lynch

(43) Symposium: THE ORGANIZATION OF CLASSIC PERIOD HOHOKAM SOCIETY**Grand Ballroom**

Organizers and Chairpersons: Jerry B. Howard and Owen Lindauer

Participants

- 1:00 Owen Lindauer and Jerry B. Howard, Introduction
 1:15 David R. Abbott, Short Term Ceramic Change During the Hohokam Sedentary/Classic Period Transition
 1:30 Bert Zaslow and Owen Lindauer, Anasazi Influence on Post Sacaton Hohokam Decorations
 1:45 J. Scott Wood and John Hohman, Foundation's Edge: Entrepreneurial Trade and the Development of the Hohokam Classic Period
 2:00 Benjamin L. Mixon, Pithouses of the Hohokam Classic Period
 2:15 Sam W. Baar, Architectural Variability in the Hohokam Classic Period
 2:30 J. Simon Bruder, Richard Ciolek-Torrello, and Donald E. Weaver Jr., The Brady Wash Complex: A Classic Period Hohokam Community
 2:45 Gina Laczko, David E. Doyel, and David R. Wilcox, Pueblo Grande: A Central Place in the Salt River Valley
 3:00 Patricia L. Crown, Classic Period Hohokam Land Use and Settlement along the Gila River
 3:15 Paul R. Fish, Suzanne K. Fish and John M. Madsen, Spatial, Functional, and Social Differentiation in a Tucson Basin Classic Community

- 3:30 David R. Wilcox, Hohokam Warfare
 3:45 Jerry B. Howard, The Lehi Canal System: Organization of a Classic Period Irrigation Community
 4:00 David Gregory, Quantification and Implications of Resource Requirements for the Construction of Hohokam Mounds
 4:15 William Doelle, Henry Wallace, and Frederick Huntington, Classic Period Community Structure in the Tucson Basin
 4:30 Discussants: Alfred E. Dittert and Fred Plog

(44) Symposium: EXPLAINING ANASAZI CULTURAL CHANGE IN THE DOLORES VALLEY**Columbine**

Organizers and Chairpersons: Christine K. Robinson and William D. Lipe

Participants

- 1:00 David A. Breternitz and Christine K. Robinson, The Dolores Archaeological Program
 1:20 William D. Lipe and Allen E. Kane, A General Model of Culture Stability and Change
 1:40 Kenneth L. Petersen, Environmental Constraints on Agriculture at Dolores
 2:00 Sarah H. Schlanger, Population Change in the Dolores Area, A.D. 600-1125
 2:20 Timothy A. Kohler, Janet D. Orcutt, Kenneth L. Petersen, and Eric Blinman, Anasazi Spreadsheets: The Cost of Doing Business in Prehistoric Dolores
 2:40 Sarah W. Neusius and Meredith H. Matthews, Resource Mix: Changes in the Relative Importance of Plant and Animal Foods of the Dolores Anasazi
 3:00 Phyllis Wolf, Kenneth L. Petersen, and G. Timothy Gross Storage in Dolores Anasazi Prehistory, A.D. 600-980
 3:20 Carl J. Phagan, T. Homer Hurby, Phillip D. Neusius, and Eric Blinman, Technological Change in the Dolores Area, A.D. 600-980
 3:40 Eric Blinman and C. Dean Wilson, Exchange and Interaction in the Dolores Project Area
 4:00 Allen E. Kane and Richard H. Wilshusen, Social Organization and Cultural Process at Dolores
 4:20 Christine K. Robinson, William D. Lipe, and Allen E. Kane, Evaluation of the Dolores Archaeological Program's Modeling Effort
 4:40 Discussants: Jeffrey S. Dean and Timothy K. Earle

(45) Symposium: LATE PREHISTORIC ADAPTATIONAL STRATEGIES ON THE SOUTHERN PLAINS**Assembly 1**

Organizers and Chairpersons: Timothy G. Baugh and Susan C. Vehik

Participants

- 1:00 Mark R. Guthrie, Thomas Pozorski, and Sheila Pozorski, An Adaptive Strategy Model for the Late Prehistoric Period in Southeastern Colorado
 1:20 Thomas R. Baker and Kathleen S. McQuestion, Southern High Plains/Southwestern Interaction: Late Evidence from the Conchas Reservoir Vicinity, San Miguel County, New Mexico
 1:40 J. Edson Way, Late Prehistoric Rock Shelters Along the Canadian River, San Miguel County, New Mexico
 2:00 Richard R. Drass and Timothy G. Baugh, Pottery and Cultural Complexes in Western Oklahoma: Investigations at the Heerwald Site (34CU427)
 2:20 Christopher Lintz, Cultural Responses to Late Prehistoric Climatic Changes on the Southern High Plains of North America
 2:40 Timothy G. Baugh, Late Prehistoric Southern Plains Economies
 3:00 Susan C. Vehik, Economies and Plains Village Adaptations
 3:20 Timothy K. Pertulla, Late Caddoan Adaptive Strategies on the Prairie-Woodland Border
 3:40 Discussant: C. Reid Ferring

(46) Poster and Film Session: IS A PICTURE WORTH A THOUSAND WORDS? YES**Century-Spruce****Participants**

- 1:00 Elizabeth A. Little, Canoe Travel Times on Inland Waterways in the Northeast
 Marcel Kornfeld and George C. Frison, Geophysical Surveying at Hunter-Gatherer Sites: The Bugas Holding Example

R. A. Johnson, J. J. Stipp, M.A. Tamers, G. Bonani, M. Suter and W. Wolfli, Comparison of Thermoluminescence Dates with Radiocarbon Dates by Beta Counting and Accelerator Techniques

Carlos Baied, Elio Massoia, and M. Mercedes Herrera, A New Archaeological Assemblage for the Sierras de San Luis, Argentina

Diane E. Gelburd, SCS's Interdisciplinary Research in Archaeology

Barbara Harkness, Mark Barnes and Ruthann Knudson, DARCOM

3:00 Mary L. Kwas, The Ritual of the Mounds: A Public Education Film

3:30 Niede Guidon, Excavations in the Toca de Boqueiras de Pedra Furada

SATURDAY EVENING, MAY 4, 1984

9:00 GOLDEN OLDIES ROCK N' ROLL DANCE

Grand Ballroom
(cash bar)

SUNDAY MORNING, MAY 5, 1985

8:00 SOCIETY FOR AMERICAN ARCHAEOLOGY

Gold
Executive Committee Meeting

(47) Symposium: BEYOND ETHNOARCHAEOLOGY: ADAPTIVE STRATEGIES OF FORAGER-COLLECTORS FROM THE ARCHAEOLOGICAL RECORD

Grand Ballroom
Organizers and Chairpersons: James C. Chatters and Chuan-Kun Ho

Participants

- 8:20 Stephen C. Lensink, A Quantitative Model of Central-Place Foraging
8:40 Bruce B. Winterhalder, Optimal Foraging: Diet Breadth in a Stochastic Environment
9:00 Yu-Zhu You, Qin-Qi Xu and Yi Li, Seasonality and Site Structure Study of Late Paleolithic from Northeast China
9:20 Chun Chen, Evolution of Paleolithic Hunting and Gathering Subsistence Strategies in North China
9:40 Chuan-Kun Ho, Mobility Pattern Changes of Hunters-Gatherers During Early and Late Paleolithic Periods in China
10:00 Philip G. Chase, Approaches to Middle Paleolithic Subsistence
10:20 Henry T. Bunn, Olduvai Bone Assemblages and Early Hominid Subsistence Strategies
10:40 C. Russel Stafford, Hunter-Gatherer Settlement Strategies: A Regional Perspective on Intra-Site Spatial Analysis
11:00 Robert L. Kelly, Technology and Hunter-Gatherer Mobility: A Method
11:20 Discussants: John W. Olsen and Robert L. Bettinger

(48) Symposium: HOUSE AND HOUSEHOLD PRODUCTION IN ANDEAN AMERICA

Silver
Organizers and Chairpersons: James A. Zeidler and Jonathan E. Damp

Participants

- 8:20 Patricia J. Netherly and Tom D. Dillehay, Domestic and Public Contexts at the Cementario de Nanchoc Site: Defining Pre-ceramic Public and Domestic Production
8:40 Karen E. Stothert, Evidence for a Pre-ceramic House and Domestic Activity Areas in Poorly Stratified Las Vegas Midden, Santa Elena Peninsula, Ecuador
9:00 Jonathan E. Damp, Domestic and Community Production in the Early Northern Andean Village

- 9:20 James A. Zeidler, Household Production in Valdivia Society: Implications of House Size Variability and Domestic Activity Patterning in the Phase 3 Dwelling
9:40 Judith A. Kreid, A Late Valdivia Domestic Household at Real Alto and its Role in the Domestic Process
10:00 Jorge G. Marcos, Instruments of Production in the Early Farmer's Household: A Review of the Archaeological Evidence from Coastal Ecuador
10:20 Michael C. Muse, Observation, Elaboration, and Purpose of Household Contextual Data at Penon del Rio: Technique, Method, Theory
10:40 David M. Stemper, Late Time Period Architecture of Wetland Farmers of the Daule River Floodplain, Ecuador
11:00 John Isaacson, Formative Structures From Nueva Era, Tulipe, Ecuador
11:20 Discussants: Nicholas David and Warren DeBoer

(49) Symposium: THE ORGANIZATION OF PRODUCTION IN NON-STRATIFIED SOCIETIES

Junior Ballroom
Organizers and Chairpersons: John R. Cross and Dean J. Saitta

Participants

- 8:00 Charles R. Cobb, A Model for the Organization of Production of the Mill Creek Chert Biface Industry
8:20 Tristine Lee Smart, Status Differentiation and Economics in Non-Stratified Societies: Adena and Hopewell in Southern Ohio
8:40 Albert C. Goodyear, Lithic Procurement for the Future: Quarry Behavior among Early Holocene Hunter-Gatherers in South Carolina
9:00 Timothy Kaiser, Formalist and Historical Materialist Approaches to Pottery Production in Non-Stratified Societies
9:20 Joan M. Gero, Gems and Labor: Displaying Prestige in Stone
9:40 Kristian Kristiansen, Production, Surplus, and Social Organization in the Neolithic of Temperate Europe 4000-2000 B.C.
10:00 Randall H. McGuire, The Muddle over Modes of Production in Archaeological Analysis
10:20 Ruth Tringham, The Organization of Production in the Prehistory of Southeast Europe
10:40 Harry Lourandos, Hunter as Producer: An Australian Perspective
11:00 Dean J. Saitta and Arthur S. Keene, The Concept of "Surplus" Production: Its Status and Effects Within Alternative Theories of Non-Stratified Society

(50) Symposium: THE CASE FOR FULL-COVERAGE REGIONAL SURVEY

Denver
Organizers and Chairpersons: Suzanne K. Fish and Stephen A. Kowalewski

Participants

- 9:00 Michael E. Whalen, Settlement Systems Reconstruction in the Southwestern United States
9:20 Suzanne K. Fish, Paul R. Fish and John Madsen, Analyzing Regional Agriculture: A Hohokam Example
9:40 Jeffery S. Dean, Intensive Survey of Long House Valley, Northeastern Arizona
10:00 David J. Wilson, The Santa Valley Project: Implications of Comprehensive and Systematic Regional Survey on the Peruvian North Coast
10:20 William M. Sumner, Regional Survey in the Near East: An Iranian Example
10:40 Jeffery R. Parsons, Critical Reflections on a Decade of 100% Survey in the Valley of Mexico
11:00 Stephen A. Kowalewski, Merits of Full-Coverage Survey: Examples from the Valley of Oaxaca, Mexico
11:20 Discussants: Robert McC. Adams, Fred Plog, and Keith Kintigh

(51) Symposium: ARCHAEOLOGY ABOUT PEOPLE: BROADENING THE PERSPECTIVE

Beverly
Organizer and Chairperson: Polly McW. Quick

Participants

- 8:20 Adrienne Zihlman, Before Stone Tools: Problems in Reconstructing the Distant Past
8:40 Jane Buikstra, Lyle Konigsberg, and Jill Bullington, Diet, Sedentism, and Demographic Change: Identifying Key Variables
9:00 Polly McW. Quick, Subsistence and Then Some: Adding Other Aspects

- 9:20 Thomas L. Jackson, Obsidian Trade Across Ethnic Boundaries: A California Case in Points
 9:40 Alice B. Kehoe, Three Hearths: What Can They Say?
 10:00 Barbara Tedlock, The Importance of Ethnoastronomy to Archaeo-astronomy in the Maya Area
 10:20 Peter Schmidt, Symboling in Archaeology: Towards a More Humanistic Science
 10:40 Discussants: Bruce Trigger, Carole Crumley, Ruth Tringham, and Wendy Arundale

(52) Symposium: 10,001 B.P.: THE END OF THE PALEOLITHIC IN THE OLD WORLD

Columbine
 Organizer and Chairperson: Lawrence G. Straus

Participants

- 8:00 T. Douglas Price, The Close of the Pleistocene in Northern Europe
 8:20 Andrew Stewart and Michael Jochim, Late and Postglacial Changes in Central Europe
 8:40 John V. Dumont, Tool Function vs. Typology: The Implications of the Starr Carr and Mount Sandel Microwear Studies
 9:00 Henri Laville, Environmental Changes and the End of the Paleolithic in the Perigord Region, Southwestern France
 9:20 Lawrence G. Straus, The End of the Paleolithic in Cantabrian Spain and Gascony
 9:40 David S. Geddes, Michel Barbaza, and Jean Vaquer, Upper Paleolithic and Epipaleolithic in Languedoc and East Pyrenees: Continuity and Change
 10:00 Nancy Coinman, John Lindly and Geoffrey A. Clark, The Upper Epipaleolithic Transition in Jordan and the Negev: A Regional Perspective
 10:20 Anthony E. Marks and Douglas Connor, The Nile Valley at the End of the Paleolithic
 10:40 John Parkinson, Later Stone Age Adaptations in Cape Province, South Africa
 11:00 Discussion

(53) Symposium: PROSPECTS AND PROBLEMS OF STATISTICAL METHODS AND INTERPRETATION IN PALEOETHNOBOTANY

Terrace
 Organizers and Chairpersons: Virginia Popper and Christine Hastorf

Participants

- 8:00 Gail E. Wagner, Comparability Among Recovery Techniques
 8:15 Mollie S. Toll, Flotation Sampling: Problems and Some Solutions
 8:30 Paul E. Minnis, Basic Interpretive Requirements of Prehistoric Ethnobotany
 8:45 Virginia Popper, Quantitative Measurements in Paleoethnobotany
 9:00 Naomi F. Miller, The Use of Ratios in Paleoethnobotany
 9:15 Deborah M. Pearsall, Measuring and Interpreting Change in Macroremain Assemblages: An Example from Panaulauca Cave, Peru
 9:30 Charles H. Mikesic, A Common Sense Approach in Multivariate Statistics in Paleoethnobotany
 9:45 Discussion
 10:15 Ellen S. Hoffman and Tristine Lee Smart, Archaeobotanical Remains and Environmental Reconstruction
 10:30 Christine A. Hastorf, Archaeobotanical Remains: Interpretive Problems Concerning Production and Consumption
 10:45 David L. Asch and Nancy B. Asch, Archaeological Plant Remains: Applications to Stratigraphic Analysis
 11:00 Sissel Johannessen, Plant Remains and Cultural Change: Are Paleoethnobotanical Data Better Than We Think?
 11:15 Discussants: William Marquardt and Richard I. Ford

(54) Symposium: ANCIENT SETTLEMENTS OF THE COLHA AREA, NORTHERN BELIZE

Assembly 1
 Organizers and Chairpersons: Thomas R. Hester and Harry J. Shafer

Participants

- 7:40 Thomas R. Hester, Archaeological Investigations at Colha, Belize: The 1983, 1984, and 1985 Seasons

- 8:00 Daniel R. Potter, Middle Preclassic Settlement at Colha, Belize
 8:20 Eleanor King, Surveying the Ancient Maya Settlement at Colha, Belize, 1983-1984
 8:40 Jack D. Eaton, Architectural Studies in the Monumental Center at Colha, Belize
 9:00 Erwin Roemer, Colha Lithic Production as a Factor in Settlement Pattern Analysis
 9:20 George H. Michaels, The Early Postclassic at Colha, Belize: A Summary Overview and Directions for Future Research
 9:40 Harry J. Shafer, Community-Wide Lithic Craft Specialization in the Late Preclassic Lowland Maya: A Case for Northern Belize
 10:00 Mary E. Pye and Eric C. Gibson, Colha, Monopolistic Theories, and the Development of Major Political Centers
 10:20 Fred Valdez Jr. and Shirley Mock, Early Postclassic Settlements at Colha, Belize: Problems in Ceramic Typology and Chronology
 10:40 Kathryn V. Reese and Fred Valdez Jr., Transitional Phase Ceramics: An Example from the Northern Belize Formative
 11:00 Leslie Shaw, The Utilization of Faunal Resources During the Preclassic in Northern Belize
 11:20 Meredith Dreiss, Trace Element Analysis of Colha Obsidian
 11:40 Eric Gibson, Results and Interpretations of the 1983 Excavations at Kichpanha, Belize

SUNDAY AFTERNOON MAY 5, 1985

(47) Symposium (continued): BEYOND ETHNOARCHAEOLOGY; ADAPTIVE STRATEGIES OF FORAGER-COLLECTORS FROM THE ARCHAEOLOGICAL RECORD

Grand Ballroom
 Organizers and Chairpersons: James C. Chatters and Chuan-Kun Ho

Participants

- 1:00 David L. Pokotylo, Regional Diversity Among Lithic Scatters on the Canadian Plateau and the Interpretation of Hunter-Gatherer Technological Organization
 1:20 Zhuang-Wei Li, Paleolithic Subsistence Strategies of North China
 1:40 Neal W. Ackerly, Adaptive Changes in Prehistoric Hunter-Gatherer Use of Wild Plant Resources: Evidence from Hancat Cave
 2:00 Chun-Chang Huang, Xishuidong: Early Paleolithic Cave Home Site from Central China
 2:20 Guo-Xing Zhou, A Case Study of Subsistence Strategies of Late Paleolithic/Holocene Transition
 2:40 P. Bion Griffin, Campsites and Home Bases: Behavioral Correlates and Archaeological Systems Among Humid Tropics Foragers
 3:00 Lawrence C. Todd, David J. Raspen, and Eric E. Ingbar, Glimpses of Organization: Integrating Site Structural Studies with Analysis of Assemblage Content
 3:20 Robert A. Foley, Forager Spatial Ecology: Hierarchical Structure in the Regional Archaeological Record
 3:40 James C. Chatters, Hunter-Gatherer Adaptations and Site Structure: An Evaluation of Dimensions
 4:00 Robert K. Vierra, Archaeological Measures of Varying Forager-Collector Strategies
 4:20 Peng Jiang, Late Paleolithic Hunting Strategies in Northeast China
 4:40 Discussants: John Olsen and Robert L. Bettinger

(48) Symposium (continued): HOUSE AND HOUSEHOLD PRODUCTION IN ANDEAN AMERICA

Silver
 Organizers and Chairpersons: James A. Zeidler and Jonathan E. Damp

Participants

- 1:00 Cathy Lynne Costin and Glenn S. Russell, Household Production and Village Specialization in the Upper Mantaro Valley, Peru

- 1:20 Sue Grosboll, Domestic Architecture as an Artifact in the Huanuco Region of Peru.
 1:40 Katharina J. Schreiber, Domestic Architecture and the Identification of Prehistoric Household Units in the South-central Highlands of Peru
 2:00 William H. Isbell, The Absence of the Household in the Huari Archaeological Record
 2:20 Charles Stanish, Household Domestic Areas, Moquegua Valley, Southern Peru
 2:40 Izumi Shimada, Productivity, Specialization, and Space as Resources: An Ethnoarchaeology of Morrope Pottery
 3:00 Discussants: Nicolas David and Warren DeBoer

(49) Symposium (continued): THE ORGANIZATION OF PRODUCTION IN NON-STRATIFIED SOCIETIES

Junior Ballroom

Organizers and Chairpersons: John R. Cross and Dean J. Saitta

Participants

- 1:45 Kenneth M. Ames, Measuring Intensification
 2:10 Katherine A. Spielmann, Farmers and Hunters: Interdependence Among Non-Stratified Societies
 2:30 John R. Cross, Craft Specialization: Contrasts between Non Stratified and Stratified Societies
 2:55 Barbara Bender, Sedentism, Storage, and Production and the Question of Change
 2:20 Dolores Root, Equality/Inequality in Production: A False Dichotomy
 2:40 Gary M. Feinman and Linda M. Nicholas, Labor, Surplus, and Production: A Regional Analysis of Formative Oaxacan Socioeconomic Change
 3:00 Patricia K. Galloway and Jerome A. Voss, Change in Choctaw Productive Organization During the Eighteenth Century
 3:20 Barbara Voytek, The Organization of Production During the Balkan Neolithic
 3:40 Barbara Price and William K. Macdonald, Lies in Archaeology: Ideology and Behavior in Corporate Descent Groups

(55) General Session: ARCHAEOLOGICAL RESEARCH IN THE OLD WORLD: NEAR AND FAR EAST

Beverly

Chairperson: Judith Propper

Participants

- 1:00 Brian Hesse and Arlene Rosen, Chronological Contamination in Stratified Archaeological Sites
 1:20 Arthur J. Jelinek, Some Interpretations of Contextual Data from the Tabun Cave, Israel
 1:40 Arlene Rosen, Holocene Environments and Settlement at Tel Lachish, Israel
 2:00 Steven A. Rosen, The Origins of Pastoral Nomadism in the Negev Desert, Israel
 2:20 Robert J. Wenke, Early Egyptian Cultural Complexity at Kom El-Hisn
 2:40 Rolfe D. Mandel and Alan H. Simmons, Geomorphology and Archaeology of the Western Desert of Egypt
 3:00 A. Bernard Knapp, The Rise of Social Complexity at Pella, Jordan
 3:20 Alan H. Simmons and Gary O. Rollefson, 'Ain Ghazal, an Early Neolithic Community in Jordan
 3:40 Ralph S. Solecki, The Shanidar Cave Protoneolithic Cemetery and its Implications
 4:00 Stanley J. Olsen, The Terra-Cotta Equids of China's First Emperor
 4:20 Evelyn J. Caballero, The Ethnoarchaeology of Placer Mining of the Batuang Kankana-ey of Northern Luzon, Philippines

(56) General Session: ARCHAEOLOGICAL RESEARCH IN THE OLD WORLD: EUROPE AND AFRICA

Denver

Chairperson: Ralph Rowlette

Participants

- 1:00 Judith A. Rasson, Neolithic Pits and Pit Contents

- 1:20 Patricia Phillips, Farmer Meets Farmer in Western Europe
 1:40 Maximilian O. Baldia, Megalithic Tomb Architecture and Ritual: An Americanist View
 2:00 Stanley H. Ambrose and Michael J. DeNiro, Dietary Reconstruction in Eastern and Southern Africa Based on Bone Collagen, Stable Carbon, and Nitrogen Isotope Ratios
 2:20 Roy R. Larick, Interethnic Conflict and Iron Smelting in Pastoralist East Africa
 2:40 Peter R. Jones, Reassessment of Developed Oldowan and Acheulean Bifaces from Olduvai Gorge, Tanzania
 3:00 Sally McBrearty, Paleoenvironmental Implications of Research at the Site of Simbi, Western Kenya
 3:20 Paul R. Green, Forager-Farmer Transitions in Coastal Pre history: Examples From the Old and New Worlds
 3:40 Anta Montet-White, Variability in Central European Gravettian Settlements

(57) Symposium: BEYOND TOOL USE: THE CONTRIBUTIONS OF MICROWEAR ANALYSIS TO ARCHAEOLOGY AND PREHISTORY

Terrace

Organizers and Chairpersons: Lawrence H. Keeley and Randolph E. Donahue

Participants

- 1:00 Lawrence H. Keeley and Randolph E. Donahue, Introduction
 1:10 Douglas B. Bamforth, Cutting Plants, Scraping Wood, and Killing Bison
 1:30 Emily H. Moss, Uses of Functional Analysis to Answer Archaeological Questions: Paleolithic Europe, 12,500-9000 B.P.
 1:50 Richard W. Yerkes, Stone Tool Function and Social Differentiation in the Mississippian Settlement at Labras Lake, Illinois
 2:10 Paula Bienenfeld, Use-wear Analysis and the Concept of Efficiency
 2:30 Randolph E. Donahue, Interpreting Site Function: Microwear Analysis of the Epigravettian Level at Paglicci Cave, Italy
 2:50 Lawrence H. Keeley, Lithic "Economy" and Style: Some Magdalenian Examples
 3:10 Discussion

(58) Symposium: DIGGING FOR DOLLARS AND MAKING SENSE: SCHOLARSHIP BEYOND ACADEME

Assembly 1

Organizers and Chairpersons: William S. Marmaduke, A. E. Rogge, and Thomas R. Lincoln

Participants

- 1:00 Thomas R. Lincoln and A. E. Rogge, Nouveau Riche Archaeology
 1:20 Frank E. Bayham, Interpreting Variation in Archaic Patterns of Animal Utilization
 1:40 Todd W. Bostwick and Connie L. Stone, The Harquahala Plain Sites: A New Archaic Period Manifestation in the Western Arizona Desert
 2:00 Donald E. Weaver Jr., Environmental Causality in Hohokam Archaeology: A Reassessment
 2:20 Lynn S. Teague, Interpreting Diversity Among the Hohokam
 2:40 Glen E. Rice and Jill Neitzel, The Modeling of Classic Period Communities in South-central Arizona
 3:00 William S. Marmaduke, A Regional Approach to Middle Gila Basin Prehistory
 3:20 Margerie Green and Richard W. Effland, Making Contracts Count
 3:40 J. Jefferson Reid and Ezra B. W. Zubrow, Contract Archaeology as Rock Art
 4:00 Bruce E. Rippeteau, Money as a Selective Pressure in the Evolution of the Quality of Data and Theory in American Archaeology

(59) Symposium: EVOLUTION OF SUBSISTENCE, SETTLEMENT, AND EXCHANGE ON THE NORTHERN CHANNEL ISLANDS OF CALIFORNIA

Columbine

Organizers and Chairpersons: Michael A. Glassow and Pandora E. Snethkamp

Participants

- 1:00 Michael A. Glassow and Pandora E. Snethkamp, Introduction
 1:15 Michael A. Glassow, Changes in Subsistence on Marine Resources Through 7000 Years of Prehistory on Santa Cruz Island, California
 1:35 Larry R. Wilcoxon, Prehistoric Marine Resource Use: A Behavioral Perspective from South-western Santa Cruz Island, California

- 1:55 Pandora E. Snethkamp, Prehistoric Exploration Practices and Paleoenvironments on San Miguel Island, California
 2:15 Jan Timbrook, Island Chumash Ethnobotany
 2:35 Jeanne E. Arnold, The Origins and Evolution of Lithic Craft Specialization on the Channel Islands, California
 2:55 Charles E. Rozaire, The Bladelet Industry on Anacapa and San Miguel Islands, California
 3:15 John R. Johnson, Ethnohistorical Research on the Northern Channel Islands
 3:55 Brenda Bowser, Dead Fish Tales

ABSTRACTS OF SYMPOSIA

(1) Organizational Complexity in Late Classic Copan.

Copan has been studied over the past nine years by three independent projects that make Copan one of the most intensively studied Maya sites in Mesoamerica. As a result, we have detailed data dealing with questions of ranking and stratification, the size and configuration of Maya households, the nature of urbanization, and the complex relationships among such variables as social structure, resource utilization and population. For this reason, we find it is time for a major symposium on Copan. The papers in this symposium, therefore, will present syntheses and new interpretations of the household and social class.

(4) Regional Perspectives on the Pleistocene Prehistory of the Old World.

Both ecological and socio-political components of past adaptations can best be comprehended from a regional perspective. Papers in this symposium will address issues significant to hominid adaptations in various regions of the Old World (Australia, China, East Africa, Central-Eastern-Western Europe, Near East) during the Pleistocene. The papers will update our current state of knowledge and evaluate the suitability of the available data for answering socio-ecological questions. The two discussants, who specialize in hunter-gatherers of the New World, will examine the Old World record from a New World perspective.

(5) Pottery Studies in the Northeast: Analytic Techniques and Anthropological Considerations.

In many areas of the Northeast, pottery analysis is still in its nascent stage. Methodology and anthropological reconstructions are both topics of debate. This symposium introduces current consensus and controversies in Northeastern pottery studies by focusing on recent research of workers in New York, New England, and the Mid-Atlantic region. Papers explore all aspects of ceramic study, including methods of analysis and classification, materials science studies, and pottery as a tool in cultural reconstruction; e.g., its utility in delineating cultural origins, distributions, chronologies, form of socio-political organization, subsistence-settlement strategies, and presence of exchange networks. Regional synthesis and local case studies are presented.

(6) Computer-Based Geographic Information Systems: A Tool of the Future for Solving Problems in the Past.

Geographic Information Systems (GIS) techniques traditionally refer to the storage, manipulation, and retrieval of geographic data by the computer. Recently, GIS has transcended the mere processing and display of data; it has taken a role in problem solving through the analysis and interpretation of geographical phenomena and process. This symposium illustrates the sophistication of GIS technology and the wide variety of potential applications to archaeological information management and research. These applications include (1) efficiency of data encoding, storage, and manipulation, (2) modeling capabilities, (3) land use planning and management, (4) the potential for investigating methodological problems and answering research questions.

(9) Moving Beyond Mere Methods: On the relationship of Quantitative Methods and Archaeological Theory.

Although quantitative methods have seen widespread use in archaeological research for almost two decades, there is little agreement within the discipline as to just what has been learned about the past through their application. Much of this lack of consensus can be traced to the failure by archaeologists to adequately consider the place of quantitative methods in archaeological research and then to demonstrate this place convincingly to potential users. Thus, the emphasis on the use of quantitative methods has been at the level of technique, and very little has been said about how method and archaeological theory should be related. The theme of this session is an examination, then, of the "proper" roles and relationships of archaeological theory and quantitative methods. Topics to be discussed are the relationships of theory to variable selection and measurement, the reliability of measurement, definition of problem and choice of technique, and the integration of method and theory into a practical epistemology of archaeological research. Suggestions for the more successful use of quantitative procedures are offered to non-specialists.

(10) Transformation of the Domestic Economy with Inka Conquest of the Mantaro Valley.

Symposium reports recent results of the Upper Mantaro Archaeological Research Project (UMARP) which has been studying change and stability in the domestic economy from Wanka II (A.D. 1250-1460), when the region was fragmented into warring chiefdoms, to Wanka III (A.D. 1460-1532), when the region was conquered by the Inka empire. We outline the indigenous Wanka II production system, exchange networks, and consumption patterns, and discuss how the local economy responded to regional peace, increased social stratification, and state tribute demands in Wanka III. Contributed

papers study subsistence goods (plants and animals), craft goods (ceramics and stone tools) and wealth (metal and shell).

(12) Prospects and Problems of Statistical Methods and Interpretation in Paleoethnobotany.

This symposium's objective is to promote new discussion of the methods that paleoethnobotanists use to obtain the quality of archaeo-botanical data they need to address anthropological questions. These papers state and explore the assumptions underlying the methods used to collect and analyze archaeobotanical data, and assess how these methods and assumptions color paleoethnobotanical interpretations. While the papers present data and interpretations, they emphasize how one gathers and uses archaeobotanical data to answer research questions. The symposium covers all stages of paleoethnobotanical research, from designing a sampling strategy to quantification and interpretation.

(14) History and State of the Art of American Archaeology.

The 50th Anniversary of the Society for American Archaeology is a milestone in the history of American archaeology, for the Society was founded at a time when American archaeology was taking its first halting steps as a professional science, and over the years—through its journal and annual meetings—it has served as the major forum for the exchange and development of archaeological knowledge. In recognition of this auspicious occasion, the Society is sponsoring this session on the History and State of the Art in American Archaeology, to assess its past, and look to its future.

(15) Archaeological Survey in Europe: Achievements and Perspectives.

In comparison with the large-scale regional surveys in the Americas and Mesopotamia, archaeological survey in Europe has matured more slowly, but nonetheless distinctively. A variety of surveys over the last 20 years has addressed several "Big Questions" of culture process, e.g. the origins of food production, socio-cultural differentiation of later farmers, and the development of urbanization. In this symposium, the achievements of regional survey in Europe are presented in the context of current culture-historical, theoretical, and methodological perspectives.

(16) Cross-Media: Technological and Social Approaches Toward a General Theory of Artifact Style.

Two previously separate frameworks for explaining morphological design variation among artifacts are wedded: technological studies of artifact manufacture, function, and maintenance, and socio-stylistic studies. Potential parallelism among five hierarchies are investigated to achieve integration: the sequence of manufacturing steps; the logical sequence of decisions about alternative options over all steps; the levels of visibility of attributes; the ranges of geographic extent of attributes; and the hierarchy of meanings of attributes. Complementary boundary conditions for the social interaction theory and information exchange theory of style—previously seen as incompatible—are set. Progress is made in developing rules for assigning meaning to attributes. Many media are examined.

(17) Evolutionary Approaches to the Study of Human Diversity.

Anthropologists are concerned with the explanation of human cultural variability over time and space. However, notions of cultural evolution are fraught with tremendous misunderstanding and continuing controversy. Many argue that scientific evolution remains an untried theory in explanations of human phenomena. This symposium addresses some fundamental theoretical and empirical issues that are largely unresolved: (1) To what extent is human cultural variability explicable in Darwinian versus Lamarckian terms? (2) What role does populationist thinking play? (3) What epistemological and methodological barriers exist in evolutionary approaches to understanding human diversity?

(18) Assessing the Impact of Federal Archaeology.

During the last decade American archaeology has experienced explosive growth. This growth is a direct result of federal and nonfederal efforts to satisfy federal environmental and historic preservation requirements. Much of the work undertaken in this vein has been criticized as atheoretical and/or for failing to make substantive contributions commensurate with the level of effort and funding. The papers in this symposium examine the evolution of substantive and theoretical archaeological knowledge in various regions of the U.S. and identify contributions directly attributable to federal archaeology. The papers serve as the basis for assessing the accuracy of the criticism, the real value of federal archaeology, and problem areas in need of additional work.

(19) Ethnobotany: New Perspectives on Old Problems.

Typically, archaeobotanical investigations are of such limited scope and offer such tentative conclusions as to be of only peripheral interest to archaeologists. Nevertheless, in attempting to relate man to his environment, archaeologists greatly desire information about issues such as domesticated plant origins and dispersal, subsistence and technological strategies and the reconstruction of prehistoric vegetation. Recent theoretical and methodological advances in ethnobotany, new data that

changes our perspective on supposedly well-known societies, and new techniques for data extraction from the archaeological record, promise insights into old and often unresolved problems. Research carried out by practicing ethnobotanical archaeologists in North America (Plains, Midwest, Southwest, Meso-america) illustrates the progress made toward resolution of these problems.

(20) Cultural Adjustments in Mesoamerica During and After the Decline of Teotihuacan.

Teotihuacan's decline and demise initiated a new era in Mesoamerica, sometimes called the PostClassic stage, which endured until the arrival of the Spaniards. This symposium examines the cultural events and processes which accompanied this restructuring of Mesoamerican societies in several key areas, including Central Mexico, the Gulf Coast, and the Maya zone. The papers include discussions of political processes, economic patterns, militarism, and elite interaction in both symbolic and mundane spheres. Archaeological, art historical, and ethnohistorical perspectives and data bases provide a multi-disciplinary vantage point on the phenomena under consideration.

(21) Maya Archaeology in the Eastern Periphery of the Central Lowlands from Preclassic to Spanish Colonial Times.

The first part of this symposium begins with an overview of the prehistoric settlement chronology and land use in the Belize Valley and will follow with specific discussions of the Late Classic, Postclassic and Historic occupation in the area. Broadening to all of Belize, the second part will focus on aspects of construction, lithic technology, and ceramic manufacture in the Postclassic and Historic periods; correlation of archaeology and ethnohistory in field research; and the interpretation of skeletal data from cemeteries. The symposium provides an overview of current research in the Upper Belize Valley in particular and the Postclassic-Spanish Colonial periods in Belize as a whole.

(22) Some Developments in Canadian Archaeology.

The main thrust of the symposium is to highlight some of the more significant recent developments in Canadian archaeology which are likely to be of interest to a general audience. It is also hoped that the presentations will help to alleviate the regrettable tendency for political boundaries to inhibit the exchange of archaeological information.

(23) Stylistic Patterning in Regional Systems of Interaction.

Stylistic patterning on a regional scale provides a means for investigating how prehistoric populations in different areas interacted with one another. Methodological problems which confront the archaeologists include the documentation of the degree of stylistic variation in different media across space, the identification of boundaries, and monitoring changes in the observed patterns. More general theoretical problems involve the relationships between stylistic variation on a regional scale and other demographic, economic, and sociopolitical and ideological variables. These issues are explored for different parts of North America which were characterized by varying degrees of organizational complexity.

(24) Shell Midden Site Analysis.

Shell Middens are a special type of site that require specialized techniques for excavation, analysis of stratigraphy, and content. The intent of this Symposium is to provide an opportunity for exchange of information on these issues by participants working on both coasts of North America. The emphasis in all papers is on methodology as opposed to site specific cultural reconstruction. Specific topics include: excavation and recording, remote sensing and evaluation of site volume, site formation processes, faunal analysis, seasonality, chronology, and paleoenvironmental reconstruction.

(25) Society for American Archaeology Regional Conferences.

Results of the SAA-sponsored Regional Conferences will be presented by the chairs of the respective conferences. Each will consider the status of the regional data base, standards and guidelines for the conduct of cultural resource management in a regional context, and interactions of regional planning with state and federal regulations and the State Plan process.

(26) Issues in Archaeological Surface Survey: Meshing Theory and Method.

Entrenched CRM methodologies are inconsistent with the disposition of archaeological remains and must be re-evaluated in light of the following questions. (1) What do we want to know about past human adaptations and what can we know about them, given the nature of the archaeological record? (2) What sorts of data and data collection methods are consistent with the above? (3) What linking arguments must be made and verified to tie these two areas together? Contributions will focus on the nature of past human systems, the cultural and natural transformation processes responsible for the archaeological record, and contemporary methods of discovery and analysis.

(27) The Behavioral Implications of Ceramics.

Traditional approaches to ceramic analyses have not emphasized behavioral components often inherent within assemblage data. Thus, little is understood of the formation processes that link ceramic production and usage with their material residues. This symposium addresses those considerations, employing both archaeological and ethnoarchaeological perspectives. Emphasis is given to those activities that create the ceramic record, and the means by which such data may be interpreted.

(31) Early Man in South America.

Results of recent excavations at the Monte Verde wet site in Chile, the Arroyo Seco Cemetery on the Argentine pampas, which also contains extinct megamammals, and several sites in northeastern Brazil will be presented. Available evidence indicates that unifacial flake and pebble tools compose the archaeologically visible material culture of early South Americans from some time before 30,000 BP. The unifacial stone industry persists into ceramic times in northeastern Brazil. In several other parts of the continent, bifacial tools appear between about 14,000 and 11,000 BP. At Monte Verde, wood was a much more important material than flaked stone to villagers 13,000 years ago.

(37) Getting Food Without Farming: Actualistic Habitat Studies That Inform Archaeology.

Archaeologists have recently begun to study detailed attributes of the distribution and quality of food resources available in selected modern habitats as a guide to modeling the problems and opportunities that would have faced prehistoric foragers. Symposium participants will discuss current studies of habitats in North America and sub-Saharan Africa that document the nutritional and harvesting constraints, the seasonal availability, and the habitat distributions of plant and animal foods. Focus will be on how such information can be analyzed to model aspects of prehistoric subsistence strategies that relate directly to the archaeological record.

(38) Archaic Hunter-Gatherer Archaeology in the Northern Southwest.

Interests in hunter-gatherer archaeology, and the recent surge in cultural resource management work, has focused attention on the Archaic period in the American Southwest. However, there have been few attempts to present a regional perspective of current Archaic research interests, or some form of regional research design. This symposium addresses this problem by offering a forum in which a series of papers can be introduced. Discussions will illustrate the current avenues of research which are being undertaken for the Archaic of the northern Southwest, and offer suggestions for future directions in problem oriented research.

(39) Demography of the Maya Lowlands.

Some of the profound changes in lowland Maya archaeology in recent decades have been in the realm of demography. Under the impact of rapidly accumulating data, the view of the Maya has been transformed from the image of very low population density to one of a surprisingly high density for the environment. This symposium will deal with demographic issues ranging from new data from ongoing projects (Sayil and Nohmul) and synthesis of older projects (Tikal and the Central Peten Lakes) to synthetic treatments of disjunctive growth, and regularity in site spacing.

(41) Advances in Computer Techniques.

The papers address a variety of current applications and issues ranging from microprocessors to the design of a data structure for a large Federal database. Several discussions focus on the increased availability of microcomputers and their use in a variety of environments. Descriptions of software include database management, graphics and plotting usage, and site register systems. Problems ranging from PC-mainframe interface, security, and legal concerns, are identified. Several applications address new computer techniques in field situations, including portable data recorders, instrument interface, bar code readers, digital devices, and database management.

(42) Economic Prehistory of the Central Andes.

During the past few years important advances have been made in the study of zooarchaeological and palaeobotanical materials from Central Andean archaeological sites. These studies provide detailed information on the prehistoric subsistence adaptation at each site, and together serve as a basis for documenting the process of economic development from early hunting and/or gathering through intensive agricultural production at the time of the Spanish conquest. Although much research remains to be completed, this symposium will provide a review of palaeobiological data from archaeological sites spanning the entire prehistoric sequence in each of the three principal eco-systems of the central Andes (puna, highland valley, coast), and examine the patterns of economic development both within and between these zones during the prehistoric period.

(43) The Organization of Classic Period Hohokam Society.

The Period A.D. 1100 to 1450 was a time of drastic change and reorganization throughout the American Southwest. This symposium examines this period with an emphasis on the changing

character of the manner in which the socio-political, economic, subsistence, and settlement patterns were organized. The concepts offered here include a combination of substantive, methodological, and theoretical perspectives whose application goes beyond the Classic Period Hohokam. Thus, in addition to providing a sample of recent Classic Period research, general theoretical goals and suggestions for new research directions are presented that also may be applicable to other Southwestern areas.

(44) Explaining Anasazi Cultural Change in the Dolores Valley, A.D. 600-980.

The Dolores Archaeological Program is a CRM project in southwestern Colorado. Most of the cultural resources within the project area are derived from A.D. 600-980 Anasazi occupations and provide evidence for extreme population fluctuations, population aggregation and village development, and agricultural intensification. A general model of culture change, based in part on least-cost principles, was adopted as an explanatory structure to generate and integrate problem-oriented and synthetic studies. Foci of the model are the resource supply and population in shaping the directions of cultural change during this time period. Expectations for agricultural intensification, storage behavior, tool kit composition, exchange and social organization are derived from the model and are tested against the archaeological record. The success of the model as an explanatory framework is assessed, and alternative models are discussed.

(45) Late Prehistoric Adaptational Strategies on the Southern Plains.

The variability of the Plains climate is often cited as an important factor in influencing human adaptation to the region. However, little detailed research has actually been conducted on that topic until relatively recently. This symposium surveys recent research on Late Prehistoric adaptive strategies on the southern Plains from two perspectives. One approach is concerned with the structure and role of external economies. The other addresses internal socioeconomic structure and its spatial manifestations. Together these two perspectives expand the understanding of southern Plains lifestyles prior to historic documentation.

(47) Beyond Ethnoarchaeology: Adaptive Strategies of Foragers-Collectors from the Archaeological Record.

Archaeologists are beginning to apply results of ethnoarchaeological research to infer the adaptive strategies of prehistoric forager-collectors. Some have focused on lithics while others concentrate on faunal assemblages, and symposia have been directed at one or another data category. While productive for individual specialists, these symposia have not engendered an exchange of ideas among scholars with different foci and methods; metalanguages remain distinct. This symposium assembles scholars from various parts of the world to (1) create an environment for communication between specialists; (2) assemble alternative methods archaeologists can apply to data of varying quality and completeness; and (3) initiate development of concepts to enhance communication among students of forager-collector archaeology.

(48) House and Household Production in Andean America.

This symposium marshals recent archaeological data relating to residential architecture and domestic economy on a comparative pan-Andean scale. Utilizing the concept of household as a basic analytical unit and unifying theme, its purpose is to examine the relation between domestic production and its larger socio-economic or political context in a diachronic perspective extending from the Pre-ceramic to Post-Conquest times. Papers focus on the definition of residential contexts as households or domestic groups and evidence for household participation in the overall social process of production. Thus, the household acts as an analytical device for ordering social and economic data in Andean prehistory.

(50) The Case for Full-Coverage Regional Survey.

There are many expositions on the methods and benefits of sampling survey, but few arguments for near-100% regional coverage. Those who have attempted full coverage see significant practical and interpretive advantages in that method. Unfortunately, many research and CRM projects presuppose sampling without considered justification. Symposium participants with full-coverage experience in the U.S. Southwest, Mesoamerica, Peru, and Iran will discuss what results could not have been obtained without full coverage, and how such results are related to the ability to address broader anthropological issues. The conclusions may lead to more careful, less automatic, formulation of regional research designs.

(51) Archaeology About People: Broadening the Perspective.

In spite of avowed efforts to be more anthropological, and in spite of many recent excursions in ethnoarchaeology, much current archaeological work reflects a disinclination to move from material remains and patterns to the people and societies who were agents in their genesis. If the move is

made, it is usually to a restricted set of domains, those related to "economic" behavior. This symposium explores the reasons for this customary narrow perspective and its implications. Theoretical and methodological avenues for broadening the perspective are offered, with case studies which illustrate the results of their applications.

(52) 10,001 B.P.: The End of the Paleolithic in the Old World.

To what extent and how did the environment changes ca., 10,000 B.P. affect human adaptations in the Old World? This symposium will address the nature of the terminal Paleolithic/early Mesolithic record in specific regions of Europe, Africa, and Asia at the traditional Pleistocene/Holocene boundary. It will deal with evidence of changes in technology, subsistence, settlement patterns, and spatial organization at this time and explore the indications, if any, that these changes may relate to environmental changes. The symposium will evaluate evidence for continuity versus rupture in regional adaptations at the end of the Last Glacial and will discuss the relative importance of environmental change versus other possible causal factors such as population pressure. It will also explore the relevance of the Pleistocene/Holocene boundary per se to culture change, as opposed to the effects of the long overall warming trend spanning the Tardi-glacial. Emphasis will be on composition of the environmental and cultural records from specific well-documented regions.

(53) Settlement Plans: The Spatial Organization of Small Communities.

The configuration of domestic and public structures and spaces within a settlement reflects many behavioral patterns of the resident community. Correlation of these behavioral patterns with specific aspects of archaeological settlement plans currently is unclear. This symposium examines settlement plan/behavior relationships using small settlements as examples. Papers discuss relationships between settlement plans and subsistence activities, exchange, social differentiation and interaction, cultural perceptions of space, and plan standardization and modification. World-wide examples include the southwestern, southeastern, and midwestern U.S., Micronesia, New Guinea, and South Africa.

(54) Ancient Settlements of the Colha Area, Northern Belize.

The continuing program of fieldwork at the Maya site of Colha, Belize, and at nearby Kichpanha, provide new perspectives on the activities within Maya settlements at these sites. Excavations at Colha in 1983 focused on Preclassic, Late Classic, and Early Post-classic locales. At Kichpanha, a Middle Preclassic house mound was excavated and Late Classic mound groups were tested. In 1985, Middle Preclassic habitations were investigated, expanding on the data obtained in 1983. This symposium addresses research problems related to each of the settlements.

(57) Beyond Tool Use: The Contributions of Microwear Analysis to Archaeology and Prehistory.

Most recent literature on microwear analysis has been concerned with technical discussions of method and technique or the simple reportage of results. This symposium is devoted to papers employing the results of high-magnification microwear analysis in addressing questions of general archaeological interest. The questions addressed include such general concerns as site function, prehistoric social organization, cultural or stylistic variability, lithic 'economy', etc. The prehistoric artifacts analyzed in these papers cover a wide range of areas and periods; PaleoIndian and Mississippian from the U.S., the Neolithic and Upper Paleolithic of western Europe, and the Old World Lower Paleolithic.

(58) Digging for Dollars and Making Sense: Scholarship Beyond Academe.

In contrast to the "scholars" of academe, contract archaeologists have been labeled "shovel bums" and their writings have been characterized as a grey literature that seldom makes connection with the larger body of thought that constitutes our profession's intellectual wealth and heritage. The first paper explores why, justifiably, or otherwise, the onerous reputation has arisen. The next seven papers are a forum for contract archaeologists working in central and southern Arizona to demonstrate their scholarly participation in the marketplace of ideas. A critical paper out of academe evaluates the scholarship of the Arizona cases. A summarist, with personal experience on both sides of the fence, concludes with further rebuttal and evaluation.

(59) Evolution of Subsistence, Settlement, and Exchange on the Northern Channel Islands of California.

Recent research carried out on the four northern Channel Islands has substantially increased knowledge of subsistence, settlement, and economic exchange systems over the course of the last 7000 years of prehistory. Systematic surveys have documented extensive occupation on all four of the islands, and analyses of midden constituents have elucidated the development of marine resource procurement systems, craft specialization, and regional exchange systems. Some of the papers in the symposium concern one or more of these topics, while others concern the use of ethnohistoric data to understand the archaeological record.

ABSTRACTS OF PAPERS

Aasen, D. Kate (Washington State)

Pollen, Macrofossil, and Charcoal Analysis of Basketmaker Coprolites from Turkey Pen Ruin, Utah.

Located in southeastern Utah, Turkey Pen Ruin provides an excellent opportunity to study Anasazi subsistence through well preserved remains. One of the most direct means of analyzing prehistoric diet is to study the plant remains that feces contain. Twenty-eight human coprolites and two turkey droppings were chosen for study. The pollen and macrofossil studies presented in this paper describe what food plants the Basketmaker Anasazi ate, how they prepared these items, and at what time of year the plants were gathered. (19)

Abbott, David R. (Arizona State Museum)

Short-Term Ceramic Change During the Hohokam Sedentary/Classic Period Transition.

The ceramic chronology, as well as the changing structure of Hohokam society, is poorly understood for the time between the late Sedentary and early Classic periods. But recent excavations at Las Colinas, a village site in the Phoenix Basin, document an exceptionally well dated occupation that is temporally placed to the Sedentary/Classic transition. The tight temporal control permits the analysis of ceramic change with uncommon detail, informing about the evolving structure of Hohokam society during a time of considerable change and, more generally, about ceramic change in prehistoric societies over the short term. (43)

Abrams, Elliot M. (Penn State)

Architecture, Labor and Social Class at Copan, Honduras.

Residential architecture is used as an index to measure social status differences at the Late Classic Maya site of Copan, Honduras. Excavated residences representing the inferred range of socioeconomic statuses are quantified in terms of energy costs, these total costs based on task-specific costs obtained through replicative experiments. Energy differentials among structures are presented and interpreted as being reflective of a tripartite labor recruitment system corresponding with the differential social power associated with the commoner, lineage elite, and central elite sectors of Maya society. (1)

Ackerly, Neal W. (Arizona State)

Adaptive Changes in Prehistoric Hunter-Gatherer use of Wild Plant Resources: Evidence from Hancat Cave.

The relationship between archaic and hunter-gatherer adaptive strategies and environmental changes in central Arizona remains poorly understood. This is especially true with respect to the use of wild plant resources. Data from recent excavations in a dry cave provide information concerning long term changes in the use of wild plant resources, while fossil packrat midden analyses provide controls on paleoenvironmental fluctuations during this period (ca. 8500-1500 BP). The resulting patterns in these plant assemblages are integrated with a regional model of hunter-gatherer adaptive changes in the Gila River Basin. (47)

Ackerman, Robert E. (Washington State)

Late Pleistocene/Early Holocene Archaeology of Southwestern Alaska with Implications for Eastern Beringia.

The earliest archaeological tradition in Southwestern Alaska (Denali or Paleo-Arctic Tradition) can be seen as an adaptation to the late Pleistocene/Early Holocene environment prior to the spread of the Boreal Forest. Similar site complexes of this age range are noted for interior Alaska and the southeastern coastal region. The relatively rapid spread of the Denali/Paleo-Arctic Tradition suggests either movements of groups of people into a more productive environment or the diffusion of a cultural complex through earlier established peoples. As this tradition appears to be the earliest yet known in Alaska with evidence indicating that it is derived from an older but similar Diuktai complex from Siberia, it can be hypothesized that older sites if found in Alaska will be simply older versions of the same tradition. (35)

Adams, E. Charles (Center for Southwestern Archeology)

Sand Canyon Pueblo: A Thirteenth Century Anasazi Ceremonial Center in Southwestern Colorado.

Large scale social and ritual networks are increasingly being recognized in prehistoric cultures of the North American Southwest. Such a network apparently developed in southwestern Colorado after A.D. 1200, centered around no more than eight ritual and exchange centers. This paper examines the first year's excavation of and survey around one of these centers, Sand Canyon Pueblo, and evaluates lines of evidence supportive of its interpretation as a ceremonial center. (40)

Adams, R. M. (50)

Adovasio, J. M. (see Andrews, R. L.) (32)

Adovasio, James M. (Pittsburg)

Style, Basketry, and Basketmakers: Another Look.

For more than a decade it has been suggested that of all classes of artifactual material available to the archaeologist for analysis, none has more potentially diagnostic features than basketry. Indeed, on the broadest or "culture area" level down to the level of the individual maker, no commonly recovered prehistoric artifact form has more culturally standardized and still visible attributes than basketry. The definition and identification of style in prehistoric basketry from the level of a linguistic "population" of weavers through an individual maker is reiterated, refined, and illustrated through case studies. (16)

Aikens, C. Melvin (Oregon)

Regional Conference Results from the Great Basin.

This paper will consider the status of the Great Basin Regional data base; standards and guidelines for the conduct of cultural resource management in a regional context; and interaction of regional planning with state and federal regulations and the State Plan process. (25)

Aldenderfer, M. S. (see Wise, K.) (28)

Aldenderfer, Mark S. (Northwestern)

On the Quantitative Structure of Archaeological Data.

The useful application of quantitative methods to archaeological problems has been hindered by many factors, but one that has received little attention is the failure by archaeologists to fully understand the structure of archaeological data. Structure as used here has two components: (1) the interrelationship of variables, measurement, and measurement reliability. These aspects of structure combine to create a continuum of the complexity of distributional forms in multidimensional space; and (2) the interrelationship of distributional form, technique, and definition of problem. A conceptualization of structure in this framework clearly integrates the empirical problem of reliable data recovery and measurement with more theoretical issues of problem definition, variable selection, and method choice. The implications of this view of structure are examined, and practical applications of the concept are offered. (9)

Alex, Robert (South Dakota State Historical Society)

Federal Archaeology in the Northern Plains: 1945-1985.

On the northern Plains, particularly in the Dakotas, from 1945 to the early 1970s, archaeology was dominated by site inventories and site excavations of the River Basin Surveys (RBS). Since the mid-1970s a broad range of physiographic and topographic areas have been surveyed through contract archaeology. Thousands of sites have been recorded. The goal of these surveys, however, has shifted from excavation to preservation. As only a limited amount of information can be gleaned from surface survey and test excavations, contract archaeology has advanced our understanding of northern Plains prehistory only slightly since the days of the RBS. (18)

Ambler, J. Richard (Northern Arizona)

Ceramic Style Frequencies in the Kayenta Anasazi Region, Northern Arizona.

A reexamination of dendrochronological evidence, combined with a seriation of single component sites, reveals that temporal spans of Kayenta ceramic styles (types) are shorter than formerly assumed and that the relative type frequencies at any given point in time can be delineated quite closely. This allows more precise control for chronologically based studies, and provides the basis for looking at old problems in new ways. The potential for demographic studies and the examination of the cyclic aspects of culture change are briefly explored. (11)

Ambrose, Stanley H. and Michael J. DeNiro (UCLA)

Dietary Reconstruction in Eastern and Southern Africa Based on Bone Collagen, Stable Carbon, and Nitrogen Isotope Ratios.

Stable carbon isotope ratios alone are insufficient to differentiate between many dietary adaptations in tropical environments. Combined carbon and nitrogen isotope analysis of bone collagen can be used to differentiate between high and low protein diets, tropical grain and non-grain plant staple diets, grazer- and browser-based pastoral or hunter diets, high and low legume plant diets, and marine and terrestrial diets. We present the results and implications of the analysis of 140 historic and prehistoric human bone samples from Eastern and Southern Africa, representing populations with hunter-gatherer, pastoral, agricultural, lacustrine and marine-based diets. (56)

Ames, Kenneth M. (Portland State)

Measuring Intensification.

Intensification is widely recognized as a significant process in changing hunter-gatherer production. However, despite intensification's theoretical importance, it remains poorly understood and difficult to apply to the archaeological records of hunter-gatherers. The development of a model of hunter-gatherer intensification with testable material correlates is an important step. The model presented in this paper is tested against a well known example of intensification: maize in the Tehuacan Valley, and a poorly known example: salmon on the Pacific coast of North America. (49)

Andresen, John M. (National Park Service, Coolidge)

Linguistic Implications for ARchaeological Study of the Hohokam Regional System.

Linguistic and archaeological data indicate that for two or more centuries near A.D. 1000, certain Yuman groups lived in close association with speakers of Upper Piman, a language unrelated to Yuman languages. Correlation of archaeological, ethnographic, and linguistic information leads to the inference that Yuman-Piman bilingualism developed in the western portion of the Hohokam culture area of southern Arizona. Comparison of Yuman and Hohokam burial practices strongly supports the linguistic analysis. The study explores the implications for Hohokam cultural development within the framework of the recently proposed Hohokam Regional System concept. (3)

Anderson, A. (8)

Andrews, A. D. (21)

Andrews, J. L. (see Johnson, D. H.) (2)

Andrews, Michael J. (BIA) and Anthony L. Klesert (Navajo Nation)

Disposition of Human Remains on Navajo Lands: Proposed Procedures.

Recent key Federal and Tribal legislation has often proved inadequate for dealing with human remains. Because of this the Navajo Nation Division of Resources has developed a working set of procedures for cultural resource managers and developers to follow in the identification, verification, and ultimate disposition of human remains on Navajo land. These procedures attempt to address legal and human concerns of next-of-kin, local residents, and the Tribe as a whole. This paper presents these procedures along with suggestions for their modification for use elsewhere. (30)

Andrews, R. L. (Pittsburg), J. M. Adovasio (Pittsburg), R. C. Carlisle (Pittsburg), G. C. Frison, (Wyoming), and R. Edgar

A Prehistoric Net From Sheep Mountain, Wyoming: Analysis, Comparisons, and Implications.

A nearly complete example of a 6th millennium B.C. fishnet knot big game hunting net recovered from a rockshelter on Sheep Mountain, Wyoming, represents the earliest of its kind ever recovered from outside the Great Basin. It is one of the very few prehistoric large game procurement nets ever recovered from anywhere in North America. The net is described in terms of process and product, and it is extensively compared to others recovered from both inside and outside the Great Basin. The implications of the existence of such nets are also discussed in terms of Archaic subsistence strategies. (32)

Armstrong, C. (see Cohnen, M. N.) (21)

Arnold, Jeanne E. (Northern Iowa)

The Origins and Evolution of Lithic Craft Specialization on the Channel Islands, California.

Recent field investigations on Santa Cruz Island reveal a chert microblade production industry of an intensity unparalleled in North America. Several island coastal sites bear densities of microblades and cores from which they were manufactured in numbers exceeding thousands per cubic meter. The origins and evolution of this industry are traced using excavation and survey data from these sites and several others, including a dozen major quarries. It is demonstrated that the manufacturing activities at certain of these sites represent true craft specialization. A definition of specialization and several methods useful in identifying genuine lithic specialization are advanced. (59)

Arnold, Philip J. III (New Mexico)

Specialization and "Spacialization": The Archaeology of Ceramic Production.

Archaeologists have long been interested in craft specialization, more for what it denotes about the socioeconomic complexity of a culture than the development of specialization itself. It is argued that this emphasis has resulted in unsatisfactory criteria for archaeologically identifying transitions in both the scale and intensity of ceramic specialization. Current ethnoarchaeological research on ceramic production and the utilization of space has revealed patterned variability along the continuum

of increasing specialization. These data are used to suggest new directions for monitoring specialized ceramic production and its development over time. (27)

Arundale, Wendy H. (Alaska)

The Impact of Federal Archaeology in Alaska.

Federal archaeology in Alaska can be divided into two periods: Pre- and Post-pipeline. Before the oil pipeline was built, federal involvement was limited largely to funding scholarly research. Since pipeline construction, however, both agency archaeology and federal contract archaeology have grown enormously, so that now almost all large and many small projects are carried out in response to federal mandates and are supported by government funding. This paper examines the organizational and substantive changes that have resulted and attempts to evaluate the contributions and shortcomings of federal archaeology in Alaska. (18)

Arzigian, Constance M. (Wisconsin, Madison)

Paleoethnobotany of the Aztalan and Fred Edwards Sites: Late Woodland-Middle Mississippian Interaction in Southern Wisconsin.

Contact between Middle Mississippian populations from Illinois and the local Late Woodland cultures can be clearly seen in two sites in southern Wisconsin. Paleoethnobotanical studies were undertaken of the previously unanalysed material recovered from the 1967 excavations at the site of Aztalan in eastern Wisconsin, and the 1984 excavations at the Fred Edwards site in extreme southwestern Wisconsin. Analysis of the material, which includes abundant tropical cultigens and a variety of nuts and seeds, provides a new perspective on the subsistence patterns resulting from such cultural interaction between disparate groups. (19)

Asch, David L. and Nancy B. Asch (Center for American Archaeology)

Archaeological Plant Remains: Applications to Stratigraphic Analysis.

Typically, the archaeological botanist has depended on the field archaeologist for structural information about a site so that a botanical assemblage can be partitioned into culturally meaningful subsets. However, carbonized plant remains have potential uses for delineating site structure, including applications to stratigraphic analysis. This paper explores some of the potential stratigraphic contributions and the assumptions that underlie use of plant remains for this purpose. Case studies are presented from research conducted at prehistoric sites in Illinois. (53)

Audouze, Françoise (Université de Paris)

Toward a Reconstruction of Magdalenian Behavior of Hunters: The Settlement of Verberie in the Paris Basin.

Research at the Magdalenian open air site of Verberie places emphasis on the integration of different research approaches: flint and stone conjoining, experimentation, microwear analysis, faunal and spatial analysis, and paleoenvironmental reconstruction. The Verberie living floor, organized into activity and refuse areas around hearths, shows activity patterns related to reindeer hunting and game processing. The presence of all stages of flint knapping and tool making at the site permit a reappraisal of the "tool-kit" hypothesis. (4)

Baar, Sam W. (Mesa Museum)

Architectural Variability in the Hohokam Classic Period.

The use of space is extremely variable during the Hohokam Classic period. Some Hohokam folk lived in compounds, others lived in pithouses, while still others lived in above-ground surface structures. Evidence from the Rowley Site suggests that this variability can be understood as the differential response to different groups of Hohokam folk. The Rowley site and other sites are examined in an effort to understand the nature of the differences between these groups and to understand the architectural forms that occur during the Hohokam Classic period. (43)

Baied, Carlos (Colorado), Elio Massoia (Castelar, Argentina) and M. Mercedes Herrera (Cordoba, Argentina)

A New Archaeological Assemblage for the Sierras de San Luis, Argentina.

Preliminary results from excavations at Cerro Quemado site (32° 47' S, 66° 5' W), a rockshelter located ca. 1700m above sea level in the Sierras de San Luis, Argentina, provide new evidence for the interpretation of regional hunter-gatherer survival strategies. (1) Intihuasi I phase (Gonzalez, 1960), was stratigraphically isolated and differentiated. (2) Detailed information is provided by diagnostic artifacts in association with faunal remains from Cerro Quemado stratigraphic Levels II and III. (3) Identified mammals include: *Lama guanicoe*, *Ctenomys mendocinus*, *Galea musteloides* and *Lagotomus* among others. (4) *Lama* and small rodents seem to be primarily sources of protein in a non-specialized hunter-gatherer pattern, mainly oriented toward the specialized exploitation of floral

resources. Pollen analysis, C14 dating and further excavations of surrounding sites will provide complementary results. (46)

Baeris, D. (19)

Bailey, Geoff N. (Cambridge) and Clive S. Gamble (Southampton)

Last Glacial Settlement Systems in Northwest Greece.

Investigations of Paleolithic settlement systems usually impose a tension between the analysis of faunal and artifactual sequences from highly localized and not necessarily representative "sites" and models postulating dispersal of subsistence activities on a regional scale. This paper outlines some of the methods and hypotheses being developed to address this problem in current fieldwork, and focuses on four specific problem areas: (1) intra-site variation; (2) rationale of site location in a local paleoenvironmental setting; (3) inter-site variation on a regional scale; (4) long-term changes. (4)

Bailey, Richard, Donald Howes, Steven Hackenberger, and David Wherry (Washington State)
Geographic Information Processing in Land Use Modeling and Testing in the Columbia River Basin.

Application of VICAR/IBIS Software using digitized terrain data and LANDSAT vegetation classification (prepared by the Washington Department of Game and the WSU Digital Image Processing Lab) allow us to propose a "greening-up" model describing the geographical availability of (1) plants with edible roots used by human foragers, and (2) browse crucial to big game animals. Integration of data for site type and location from the Washington State Computer Site Inventory make possible the VICAR/IBIS catchment analysis (radius search function) necessary to describe relationships between predicted plant and animal resource availability and prehistoric settlement patterns. Preliminary modeling and testing results will be given. (6)

Baird, Ellen T. (Nebraska, Lincoln)

Stars and War at Cacaxtla.

The Cacaxtla murals are often described as a synthesis of Maya-Teotihuacan style and elements. This paper focuses on one Teotihuacan derived element—a star shape—with limited use at Cacaxtla. At Teotihuacan this element is found most often in two contexts: aquatic and militaristic. The latter is consistent with its use at Cacaxtla and suggests continuity of meaning. It further suggests that some of the glyphic elements at Cacaxtla are concise visual statements which derive their appearance and meaning from more complete and complex mural and ceramic scenes at Teotihuacan. (20)

Baker, Thomas R. (Pittsburg) and Kathleen S. McQuestion (Eastern New Mexico)

Southern High Plains-Southwestern Interaction: Late Evidence From the Conchas Reservoir Vicinity, San Miguel County, New Mexico.

A recent reconnaissance of acreage surrounding Conchas Reservoir, located in the eastern portion of San Miguel County, New Mexico, at the confluence of the Canadian and Conchas Rivers, indicates the existence of an interaction network between aboriginal inhabitants of the Southern High Plains and the Southwest. The evidence recorded includes both lithic and ceramic artifacts. The lithic assemblage consists of projectile point styles and raw material sources, such as Alibates chert and obsidian, attributable to both geographic areas. Brownware and greyware ceramics attributable to the southwest were also recovered. (45)

Baldia, Maximilian O. (Southern Methodist)

Megalithic Tomb Architecture and Ritual: An Americanist View.

Central Place Theory, Archaeoastronomy, transhumant cattle herders, egalitarian farmers, kings, Mediterranean teams of priests or architects etc., fail to explain the evolution of Continental Northern European megalithic tombs. Analysis of 4000 tombs suggest that these "shrines" lined (paved?) trade routes which link major population centers. Originally conceived as permanent mortuary structures, these "public" monuments fostered "pilgrimages" and rituals designed to integrate very diverse socioeconomic systems in a woodland environment. The architecture reflects strong spatial (social?) divisions, limited access, rights of passage, etc. Local and regional interpretations of the "universal" ritual complex as well as their temporal changes are evident in the architecture. (56)

Ball, Joseph W. (San Diego State)

Teotihuacan's Fall and the Rise of the Itza: Realignments and Role Changes in the Terminal Classic Maya Lowlands.

In the northern Maya lowlands, the period immediately following the collapse of Teotihuacan was a time of political turmoil and commercial realignments culminating in the emergence of Chichen Itza as the dominant political and economic power in the region. Much of this turmoil involved the expansionist activities and internal conflicts of non-Yucatec Itza Maya from the western Gulf coast

and possibly the northeastern Peten. This paper examines the apparent course of Itza maneuvering between A.D. 750 and 1000 as documented archaeologically and ethnohistorically given the validity of a correlation of the Christian calendar with Maya at 11.16.0.0.0 in the latter. The interpretive effects of valid correlations at either 11.5.0.0.0 or 11.3.0.0.0 are also considered. (20)

Balsom, Janet R. (Arizona State/National Park Service)

Application of Heavy Minerals Analysis to Anasazi Ceramics in Grand Canyon.

The geologic technique of heavy mineral analysis is used to characterize prehistoric Anasazi ceramics from two areas within Grand Canyon National Park. Three questions concerning the use of the analytical technique are posed: (1) can heavy mineral analysis be used to identify similarities and differences in the raw materials used in ceramic production, (2) is the technique sensitive enough to recognize slight differences in raw material sources, (3) is the technique feasible when standard ceramic analysis cannot adequately address the research questions? Analysis of Grand Canyon ceramics indicates that the technique is feasible for a variety of research questions. (40)

Bamforth, D. B. (see Dorn, R. I.) (35)

Bamforth, Douglas B. (UCSB)

Cutting Plants, Scraping Wood, and Killing Bison.

Tools from small bison kills at the Lubbock Lake Site, Lubbock County, Texas, show undoubted microscopic traces of use on wood and plants, as well as in butchering. These diverse activities and the abundance of tools used in them contrasts with the small, uniform assemblages recovered from most bison kills. This contrast apparently results from the organizational differences between communal and non-communal hunting. The former is quite predictable and requires an essentially constant and high degree of organization and preparation wherever it is practiced. The latter is much less predictable and its practice more closely reflects local adaptations and environmental conditions. (57)

Barbaza, M. (see Geddes, D. S.) (52)

Bargielski, Monica M. and Robert L. Rands (Southern Illinois, Carbondale)

Color and Paste Compositional Relationships in Maya Ceramics: Palenque Mexico.

Covariation is sought between color and paste compositional groups derived from neutron activation analysis. Munsell color data are analyzed for fired pottery having membership in the chemical groups. The relationship of color (primarily reflecting iron concentration) to the multivariate elemental concentrations that characterize a chemical group is considered in the context of production and exchange in Palenque region ceramics. Wider methodological issues relate to the utility of paste color in provenance studies. (40)

Barker, Graeme (British School at Rome)

Early State Formation in Italy: The Contribution of Archaeological Survey.

The archaeological investigations of the emergence of the Etruscan and allied states in Italy in the first millennium B.C. has traditionally concentrated on the major settlements and cemeteries and their artifactual record. Hardly anything has been known of settlement trends at the regional scale, or of relationships between population centers and their rural hinterlands, of the kind which are a cornerstone of models of state formation in other parts of the world. This situation is finally being rectified. The paper discusses the contribution of recent archaeological surveys in different parts of the Italian peninsula to the study of early state formation, work which already points to far greater regional complexity than hitherto supposed. (15)

Barnes, Gina L. (Cambridge)

Landscape Reconstruction for Investigating Protohistoric Landuse Patterns.

Archaeological research in intensive agricultural regimes which obscure the land surface often requires reconstructing the original topography. Aerial photographic reconstruction of surface features should be accompanied by subsurface exploration. Results are reported for a coring project in a Japanese rice-paddy regime, which tested landform reconstruction against stratigraphy while trying to identify palynologically postglacial marshlands that were turned into rice paddies by the earliest agriculturists ca. 200 B.C. (2)

Barnes, M. (46)

Barnes, Mark R. (National Park Service, Atlanta) and Ruthann Knudson (Woodward-Clyde Consultants)

The DARCOM Archaeological and Architectural Overview and Management Planning Project, 1982-1985.

For the past three years the U.S. Army DARCOM has supported a cultural resource management planning project through the National Park Service, resulting in a management plan for each of 74

facilities in over 30 states. The project's archaeological component has been completed following a nationally applicable Work Plan. Most of the plans have been designed prior to any intensive field survey, and each plan has been reviewed and accepted by the appropriate State Historic Preservation Officer. The affected cultural resources range from Folsom sites through 18th century homesteads, and rely on an evaluation of geomorphology and soils, land use history, and military construction practices to identify areas of needed archaeological evaluation and management. (46)

Bar-Yosef, Ofer (Hebrew, Jerusalem)

Boundary Situations During the Late Pleistocene and Early Holocene in the Levant.

Recent regional archaeological projects in the Mediterranean Levant which focused on questions of chronology, technology, paleoecology, and site typology allow a delimitation of Upper Paleolithic and early Neolithic cultures in the area. The reconstructed regional settlement and interaction patterns permit a preliminary evaluation of cultural boundaries as well as an examination of changes in boundaries from the Levantine Paleolithic to the early Neolithic. The paper will also examine the relative importance of the observed changes (both climatic and cultural) for the establishment of early farming communities. (4)

Barth, J. (25)

Baugh, T. G. (see Drass, R. R.) (45)

Baugh, Timothy G. (Oklahoma)

Late Prehistoric Southern Plains Economies.

A number of recent studies have focused on Southern Plains/Southwest exchange. These in turn have presented two contrasting models of this late prehistoric/protohistoric exchange system without providing conclusive results. This paper will examine the internal structure of trade for the Edwards and Garza complexes of the Southern Plains providing the spatial dimension for this study. Recent obsidian hydration dates will provide the temporal framework. By this means, the nature of the internal alliance structures and exchange processes can be evaluated against the two models of Southern Plains/Southwest exchange. (45)

Baumler, Mark F. (Arizona)

A Technological Analysis of Flake Production at the Middle Paleolithic Site of Zobiste in Central Yugoslavia.

Recent excavations at the Middle Paleolithic open-air station of Zobiste in Northern Bosnia, Yugoslavia, have yielded a well-documented assemblage comprising over 4000 pieces of chipped stone. Two major aspects of this lithic industry, observed in collections from neighboring sites as well, include the co-occurrence of laminar and radial flake preparation and the joint production of naturally backed and Levallois flake blanks for use as tools. Interpretations for this technological pattern are offered within the framework of a model of continuous lithic reduction based upon quantitative measurements of core preparation. (40)

Bauer, B. S. (see Berman, M.) (2)

Bauer, Brian S. (Chicago)

The Paqarectambo Project: An Interim Report.

The Paqarectambo Archaeological Project is an intensive survey of a remote region of the central highlands of Peru (Cuzco). It will provide the first and second phases of a long-term, multi-stage investigation of the diverse cultural histories and adaptive strategies of the area's prehistoric population. While the thrust of the study is aimed at describing the Huari and Inca expansions into the area, the settlement systems of the Early Horizon, Early Intermediate, Late Intermediate and the present day occupations are also being investigated. The paper presents the specific objectives, procedures and results from the project's first field season. (40)

Bayham, Frank E. (Arizona State)

Interpreting Variation in Archaic Patterns of Animal Utilization.

Optimal foraging theory predicts that levels of utilization efficiency for hunter-gatherer groups will vary with the potential energetic return rate of a given habitat. A technique for measuring selective efficiency in archaeofaunal assemblages is proposed. Comparison of efficiency indices among various Archaic Period and later Hohokam faunal assemblages are made to partition the relative influence of habitat productivity and logistical foraging behavior on variation in Archaic faunal use patterns. Data tend to support the prediction for middle Archaic contexts but patterns are less clear for later periods where variation appears to be directly linked to changes in mobility and economic organization. (58)

Beaudry, Marilyn P. (Smithsonian Institution)

Late Classic Painted Ceramics as Indicators of Social Class.

Painted ceramics in caches and ritually appointed burials suggest that these objects relate to high status or access to scarce resources. Other data, however, indicate all levels of Copanec society had access to painted ceramics. A question is thus raised as to the social significance of these goods. Variation in consumption patterns of various painted ceramic types in the Copan Valley suggest that the ceramic groups functioned differently during the Late Classic. The correlation of ceramics and social class is presented at a type-specific level but other cultural factors also are determining the use of painted pottery. (1)

Benco, Nancy L. (SUNY, Binghamton)

Pottery Diversity and Political Centralization.

The relationship between political/administrative centralization and craft production has been of major interest to archaeologists recently. One general model has proposed that political centralization correlates with increased administrative involvement in craft production, which leads to decreased product diversity. This paper presents a case study which refutes the model. Archaeological evidence from a historical, multi-component site in North Africa suggests that increased political/administrative involvement in the regional economy had minimal impact on local ceramic production. A hierarchical diversity index, which measures both functional and morphological-compositional aspects of ceramic variety, is used to detect the absence of change in pottery diversity. (11)

Bender, Barbara (University College, London)

Sedentism, Storage, and Production and the Question of Change.

Much recent analysis of change within hunter-gatherer, or from hunter-gatherer to farmer societies has focused on the prerequisites for, and the effects of, increased sedentism and storage. Often these phenomena have been related to specific environmental or demographic conditions. This paper, while giving due weight to environmental potential, will focus on the socio-historical configuration within which productive relations are embedded, and on the dialectical relation between ideology, power, and material provisioning. Contemporary and prehistoric case studies will be used to illustrate the argument. (49)

Bender, Susan J. (Skidmore) and Gary A. Wright (SUNY, Albany)

The Adaptive Role of the Mountains in High Plains Prehistory: A Reassessment of the Refugium Hypothesis.

The effects of the Altithermal climatic episode on the high altitude occupations of the Northwestern Plains are considered. The traditional model of the mountains as an Altithermal refugium is rejected in light of: (1) problems in the definition of the cultural and climatological components of the model, (2) problems in correlating large-scale climatic episodes with small-scale adaptive processes, and (3) the evidence of high country chronologies. (32)

Bennett, S. (see Cohen, M. N.) (21)

Benson, Charlotte L. (New Mexico)

Residential Mobility in the Evolution of Non-Egalitarian Societies.

A model is developed for predicting the maximum amount of social structural differentiation possible in a group, based on extra-group options reflected in residential mobility. The conditions under which grouping and differentiation are advantageous, the factors limiting dominance, and the effects of kinship on cooperation and competition are outlined. The utility of the model in explaining social organizational and social structural change is assessed in an application to the prehistoric American Southwest. (17)

Benz, Bruce F. and Hugh H. Iltis (Wisconsin, Madison)

Maize Ear Morphology: Racial Variation in Mexico.

The recent theory by H.H. Iltis on the origin of the maize ear by catastrophic sexual transmutation (CST) stresses inflorescence homologies between the ear of maize and the tassel spike of its ancestor teosinte. It also provides the basis for understanding the morphological complexity of the maize ear. Identification of the extant primitive Mexican maize races is contingent upon the realization of these homologies. The biogeography of Mexican maize races sheds light on the origin of maize and on the dispersal of maize by prehistoric societies in Mesoamerica. Maize from archaeological sites in the Valleys of Tehuacan, Oaxaca, and Mexico are examined in relation to these findings and to a tentative phylogenetic classification of Mexican maize races. (19)

Berlo, Janet C. (Missouri, St. Louis)

Writing in Central Mexico: A.D. 700-900.

Studies of Mesoamerican writing systems have focused overwhelmingly on Maya hieroglyphs, with the Aztec, Mixtec, and Zapotec systems receiving much less attention. In particular, the roots of writing in Central Mexico have not been carefully examined. Although the Central Mexican epigraphic system is best known from late pre-Conquest and early Colonial pictorial manuscripts, fragmentary evidence in less perishable materials demonstrates that some basic principles of Central Mexican writing were in use by Phase One of the Second Intermediate Period. Sites to be examined in this paper include Xochicalco, Cacaxtla, and Teotenango, with particular emphasis placed on Xochicalco's stone monuments. These will be discussed as a major public statement of calendrical, religious, and political information during this period. (20)

Bermann, Marc (Michigan) and Brian Bauer (Chicago)

Other Lands: The Challenge of Ethnohistory to the New Sciences.

Both the New Archaeology and the New History were representative of the epistemological shift in social thought seen in the 1960's. Each attempted to rectify the perceived failings of its discipline, with its emphasis on: (1) description, (2) narrative cultural history, (3) the event as explanation and (4) the impact of economic and political elites. Instead, both new schools stressed: (1) long term economic and ecological trends, (2) underlying system dynamics as explanation and (3) economic rationality. Both schools developed methods which stressed the quantitative analysis of "hard data" in a search for "objective" laws of human nature. However, recent ethnohistorical research, which explores the importance of cultural mediating processes in historical perception, raises key doubts about the suitability of these new social sciences for cultures where the "economic man" does not hold sway. (2)

Bettinger, R. L. (47)

Bienenfeld, Paula (SUNY, Binghamton)

Use-Wear Analysis and the Concept of Efficiency.

This paper describes results of a high-power use-wear analysis of flint tools from some Dutch Neolithic sites. One aim of the study is the identification and measurement of efficiency in tool manufacture and use at the sites. An efficient use of raw material, for example, is one in which the amount of waste is very low, compared to the amount of usable raw materials produced. The results are ambiguous; some measures indicate relatively efficient tool manufacture and use, others do not. This suggests that the concept of efficiency as currently defined does not adequately account for prehistoric tool manufacture and use behavior evident in the archaeological record. One reason for this may be the assumption archaeologists hold that efficiency is a natural, rather than culture-specific, motive for human action. (57)

Binford, L. R. (26), (29), (38)

Binford, Lewis R. (New Mexico)

Taphonomy at a Distance: Zhoukoudian.

The site of Zhoukoudian has figured prominently in our literature on hominid adaptations during the Middle Pleistocene yet has been subjected to little systematic analysis. This paper is an attempt to use extant literature for a synthesis of the site report. It focuses on the internal organization of the original cave and assesses the spatial distribution of animal bones, stone tools, and of modified lithic pieces in relation to the original morphology of the cave. (4)

Bintliff, John L. (England, Bradford)

Survey in Greece.

The history of archaeological field survey in Greece can be divided into distinct phases; in each successive period both techniques and research aims have become more sophisticated. Increasingly wider spatial coverage has encouraged both regional and national analyses of settlement patterns and the employment of approaches taken from modern geography and sociology. For the prehistoric periods it is timely to ask how rigorously current interpretive models fit the available data base. The latest results from field experiments with prehistoric material suggest we may indeed be entering a new phase of reorientation and reevaluation in both theory and practice, with unpredictable results. (15)

Bird, Robert McK. (Missouri, Columbia)

Archaeobotany of the North Coast Pre-ceramic: Huaca Prieta.

Excavation by Junius B. Bird of a 320m³ pit house using a semi-isolated block technique revealed nearly 20,000 fragments of plant remains and over 7700 pieces of textile, basketry, cord etc. Lima bean, three (4?) curcubits, a pepper, lucuma, guava, cotton and many other species date back to ca.

2450 B.C. (uncorrected). At ca. 2300 B.C. there was a shift to more gourd shell and curcubit stems and to fewer cotton seeds. There were drops in lucuma and canna between 2200 and 2000 B.C. Initial pottery period deposits nearby show introduction of peanuts and new squash, cotton, and pepper forms. (42)

Blinmann, E. (see Phagan, C. J.) (44)

Blinmann, E. (see Kohler, T. A.) (44)

Blinmann, Eric and C. Dean Wilson (Dolores Archaeological Program)
Exchange and Interaction in the Dolores Project Area.

Exchange is expected to link social groups that share kinship or other relationships, to serve as an economic buffer both within and between communities, and to be a means of accumulating and demonstrating economic and social power. Spatial and temporal variation in resource supply, population movement and aggregation, and the potential for economic and social differentiation lead to predictions for changes in exchange networks within the Dolores area. These predictions are evaluated through the occurrences of non-local materials in the Dolores area sites. (44)

Blumenschine, Robert J. (Berkeley)

Scavenging Opportunity in the Seregeti and Ngorongoro Ecosystems.

The scale and characteristics of scavenging opportunity are effected by a number of factors, including: (1) patterns of carcass consumption by primary consumers, (2) carcass size in relation to consumer type and number, and (3) carcass density distributions in relation to carnivore density distributions, and seasonal, daily and micro-habitat variations. These factors are discussed in terms of possible characteristics of a hominid scavenging niche, which is suggested to have a strong seasonal and micro-habitat component, focusing on adult medium sized ungulates from which marrow as well as flesh can be regularly procured. (37)

Bocek, Barbara (Stanford)

The Dynamics of Rodent Disturbance: Its Effects on Archeological Deposits

Studies of burrowing rodent ecology are used to identify the dynamics of rodent disturbance, and its peculiar effects on archeological site contents. Burrowing activity appears to: (1) cause downward displacement of site contents into underlying strata, (2) create artificial concentrations of small-sized materials near the surface, (3) create apparent horizons of larger materials at depths of 30-60 cm, and (4) cause minimal horizontal displacement, relative to vertical movement. In order to illustrate these processes, predicted patterns are compared with data from excavations in the San Francisco Bay Area. (2)

Bonani, G. (see Johnson, R. A.) (46)

Bonnier, E. (see Kaplan, L.) (42)

Bostwick, Todd W. (Northland/Arizona State) and Connie L. Stone (BLM/Arizona State)

The Harquahala Plain Sites: Late Archaic Occupation of the Western Arizona Desert.

Recent contract investigations have revealed several clusters of Archaic sites on the Harquahala Plain, 75 miles west of Phoenix. The unexpected presence of San Pedro Cochise points in this region is relevant to questions regarding distinctions between the Amargosa and Cochise traditions. Artifacts and ecofact analyses are used to measure differential access to food and raw material resources which, in turn, is used to develop a settlement and subsistence model for the Archaic use of the basins of the Sonoran Desert. (58)

Borstel, Christopher L. (National Park Service, Boston)

Quantifying Shell Middens Using a Visual Estimation Technique

Sampling shell middens for quantitative studies can produce large amounts of material, which are time consuming to collect and expensive to transport and curate. A visual estimation technique using photographs and a standardized comparator offers a rapid, accurate, low weight alternative. The technique produces a permanent record, has a minimum threshold of ca. 40g shell/100 cm³, and correlates well with results from column samples. Visual estimation is useful where speed is important, where expenses must be minimized, or where, as in the case of museum collections, only photographic records are available. This paper explores the technique using examples from Cape Cod, Massachusetts. (12)

Bowser, Brenda. (UCSB)

Dead Fish Tales.

Analysis of fish remains from two Prehistoric sites on San Miguel Island, California, is presented. Evidence for shifting patterns of habitat exploitation at the end of the Middle Period implies that use

of hook and line was replaced by netting as the prevailing method of procuring fish. It is suggested that hook and line fishing resulted in selective pressure on larger individual fish, size of catch per unit of effort declined, and the technological response of human groups was to concentrate on netting smaller fish. Implications regarding Late Period social organization and development of the regional economic system are discussed. (59)

Boyd, R. (see Richerson, P. J.) (17)

Bradley, Bruce A. (Center for Southwestern Archaeology)

Chacoan Archaeology in the Montezuma Valley, Southwestern Colorado.

A Chacoan Anasazi presence in southwestern Colorado has been identified as having occurred during the late 11th and early 12th centuries A.D. This occurrence is explained by a process of religious and economic colonization which is illustrated by a hierarchy of settlement types including mission sites, convert communities, and tributary sites. Additional sites which exhibit no Chacoan connections have also been identified. This model has been constructed using data from the Chaco Project and seven completely or partially excavated sites in the Mesa Verde region. (3)

Branchard, W. (see Del Bene, T. A.) (38)

Braun, David P. (Southern Illinois, Carbondale)

Making an Impression: Illinois Woodland Pottery Design and Social Interactions.

Can we treat the decoration on Woodland pottery as a consequence of social processes that affected the artisans' decorative decisions at several different levels? In addressing this question, the paper also discusses the implications of this idea for how we go about studying regional "tribal" social processes, and some of the site formation processes that affect comparability among samples across a region. Data from three sample locations in Illinois are used to pursue questions of how social relations across the region varied over time, and what this variation may tell us about "tribal" social processes in general. (16)

Bray, T. L. (see Pope, M.) (2)

Breternitz, David A. and Christine K. Robinson (Dolores Archaeological Program)

The Dolores Archaeological Program.

The Dolores Archaeological Program (DAP) is contracted with the Bureau of Reclamation to mitigate adverse impacts of the McPhee Reservoir on cultural resources in southwestern Colorado. Most of the cultural resources represent Basketmaker III colonization of the area shortly after A.D. 600 and growth and change of those populations through the next four centuries. As part of the culture process problem domain of the DAP research design, the DAP has undertaken a modeling effort to integrate studies of environment, population, settlement location, subsistence, technology, exchange, and social organization. (44)

Bricker, H. M. (see David, N.) (4)

Brock, Sharon L. (New Mexico)

Activity-Induced Shape Change in the Human Lower Limbs Through Time in the Prehistoric Southwest.

A series of archaeological hypotheses concerning changes in the human behavioral adaptive patterns are examined using human skeletal remains from prehistoric sites in the eastern Southwest. These changes are related to four dimensions: time, topography, intra- and inter sexual differences. Detailed biomechanical analyses of human locomotor anatomy precisely evaluate alterations in levels and patterns of activity induced bone hypertrophy. The bone changes follow normal patterns of bone remodeling well documented through orthopedic research. Significant diachronic changes in skeletal morphology are correlated with archaeological postulates of human adaptation in the prehistoric Southwest. (2)

Brooks, Richard H. (Nevada, Las Vegas), Michael S. Foster (Texas, El Paso) and Sheila Brooks (Nevada, Las Vegas)

Observed Mortuary Practices From La Cueva de los Muertos Chiquitos, Near Zape Chico, Durango, Mexico.

Two series of infant and child burials were found under puddled adobe floors below an occupation midden, in a dry cave near Zape Chico, Durango, Mexico. The number of burials and the age determinations were interpreted as possible epidemics which affected infants and children at two different times. The care taken in preparing the bodies for burial implies relatively complex mortuary practices, as do the accompanying food offerings, and individual grave goods. From these data speculations are derived as to the social significance of the burials. (28)

Brooks, S. (see Greeks, R. H.) (28)

Brose, D. (see Munson, C.) (25)

Brose, David (Cleveland Museum) and Cheryl Munson (Indiana)

Regional Conference Results from the Midwest.

This paper will consider the status of the Midwest Regional database, standards and guidelines for the conduct of cultural resource management in a regional context, and interaction of regional planning with state and federal regulations and the State Plan process. (25)

Browman, David L. (Washington, St Louis)

Economic Models in the Pre-Incaic Andean State.

Models for the economic organization of pre-Incaic states include concepts such as stable finance, vertical mobilization, corvée labor recruitment, market exchange, etc. The focus is upon the political economy of two selected areas—the Mantaro and Titicaca basins—in the central and southern sierra during the Middle Horizon and Late Intermediate Period. Current amongst Andeanists is a model of Inca economic organization, popularized by French Marxists, which does not accurately reflect the complexities of the pre-Incaic system. As the Inca were opportunistic, incorporating extant systems within their state, explication of pre-Incaic systems will aid in redefining the resultant Incaic economic system. (28)

Brown, J. A. (4)

Brown, J. A. (see Thunen, R.) (23)

Brown, James A. (Northwestern)

Quantitative Comparative Analysis of Artifact Assemblages in Retrospect.

This paper reviews the accomplishments of the quantification of the methods for approaching the problem of comparing artifact assemblages. Typically, this approach compares two or more sets of objects within a particular domain of objects (e.g., material culture traits, lithic artifact types, ceramic style types). Common quantitative methods used to facilitate analysis are cluster analysis and principle components analysis. From the perspective of hindsight these and other methods will be evaluated for their contribution to the subject of inter-assemblage comparison. (9)

Brown, Kenneth L., Randolph Widmer, and Marylinda Govaars (Houston)

Urban Archaeology and History in a Twilight Zone: 13 Blocks on the Edge of Downtown Houston, Texas.

Houston, Texas was founded in 1836 as an inland coastal plain trade center. With the exception of one decade (1850s), Houston has grown at a rapid rate. Unfortunately little archaeology has been conducted during this growth. Recently, excavation was conducted in a 13 block area of the near downtown. This area began as a residence zone, developed into a wealthy residential zone, and then began to go "downhill" into poor residential/light commercial. This paper outlines the tremendous amount of archaeological data, interpreting it in light of available historic documents. Much was recovered that was not found within these documents. (30)

Brown, Kenneth L. (Kansas)

Temporal and Spatial Change in Pomona Ceramics: A Plains Village Variant in Eastern Kansas and Western Missouri.

Development of rim types, based on discrete rim and lip forms, are analyzed by: (1) relative frequencies and (2) cluster analysis. Results of the cluster analyses indicate it is not sensitive to temporal and/or spatial trends. Pottery characteristics that are sensitive to temporal and spatial change are: (1) shell temper, (2) cordmarked lips, (3) collared rims, (4) crenated and scalloped lips, and (5) knobbed rims and lips. Eight river drainages in eastern Kansas and western Missouri are used to delineate, geographically, the occurrence of rim and lip decorative elements and types of tempering materials. (11)

Bruder, J. Simon, Richard Ciolek-Torrello and Donald E. Weaver, Jr. (Museum of Northern Arizona)

The Brady Wash Complex: A Classic Period Hohokam Community.

A major goal of the Tucson Aqueduct project is to delineate Hohokam cultural development in the Brady Wash area. Prehistoric occupation spanned the late Colonial Period through the very late Classic Period representing intensive, long-term exploitation of a marginal environment. This sequence culminated in a Classic Period settlement with hamlets arranged around a centrally located platform mound. The project affords a unique opportunity to document community structure and to explore the sociopolitical implications of platform mounds in Classic Period settlements. (43)

Brunson, Judy (Arizona State)

Los Muertos: The Dead Can Rise Again.

An analysis of mortuary data from the Classic period Hohokam site of Los Muertos is presented. Located in the present-day Phoenix/Tempe metropolitan area, the site was farmed under by the 1930's. Fortunately, notes and data were collected by Frank Hamilton Cushing, as director of the Southwestern Hemenway Expedition, in 1887 through 1888. Cushing's excavation team collected over 500 cremations and inhumations, providing one of the largest Classic period Hohokam burial data sets known. A reconstruction of the excavation data provides a means to analyze variability in burial methods and accompanying artifacts for this important Classic period site. (3)

Bryant, A. L. (31)

Buckles, William G. (Southern Colorado)

Abstract Western Archaic Rock Art: Chronological and Behavioral Propositions.

A widely distributed style of rock art of western North America has been identified by many investigators as a probably early style related to Archaic stage occupations. An early date of the style is verified from an investigation of a uniquely exposed site in southeastern Colorado. Comparisons of manifestations of the style elsewhere are made and behavioral characteristics of makers of the style are proposed. The later predictions are based upon ethnoarchaeological data and ethnographic descriptions of peoples who made similar art historically. (36)

Buikstra, Jane, Lyle Konigsberg, and Jill Bullington (Northwestern)

Diet, Sedentism, and Demographic Change: Identifying Key Variables.

The explanation of past demographic change is crucial in the study of human evolution and adaptation. Key issues include the relationship of sedentism and dietary change to population increase, and the relative importance of altered fertility and mortality patterns in human prehistory. Skeletal series can provide data which may be more pertinent than many studies of living human groups which have informed previous archaeological discussions of these issues. To demonstrate this point, an analysis of Woodland and Mississippian skeletal series is reported which shows interrelationships of fertility, diet, technology and sedentism. (51)

Bullington, J. (see Buikstra, J.) (51)

Bumsted, M. Pamela (Los Alamos National Laboratory)

Prehistory in the Nuclear Age.

The structure and behavior of the atom are under current development as an analytical anthropology approach to prehistory. By integrating biological/archaeological anthropology and analytical/isotope chemistry, one can specify biocultural contexts with known accuracy and reproducibility in space and time. Ecological and dietary information are contained in the chemistry of biological remains. The simple, single element system of $^{13}\text{C}/^{12}\text{C}$ analysis provides an estimate of maximum proportions of meat, maize, and other vegetables in diets of individuals. Multi-element and multi-isotopic faunal studies reveal changing animal-plant resource patterns. New multi-variate models correctly apportion chemical variation in remains to the dietary, physiological, ecological, and diagenetic sources. (2)

Bunn, Henry T. (Wisconsin, Madison)

Olduvai Bone Assemblages and Early Hominid Subsistence Strategies.

Taphonomic analysis of fossil and bone assemblages from a 2 to 1.5 million year old Olduvai site and middle range research provide a basis for evaluating and augmenting current models of early hominid subsistence behavior. Using data on faunal size, skeletal part representation, butchery patterns and age structure, it is evident that early hominids were not the most marginal of scavengers operating at abandoned, large carnivore kill sites; rather, hominids transported systematically butchered meaty parts of carcasses obtained through scavenging and hunting to favored locales for further processing. (47)

Burgett, G. R. (see Parry, W. J.) (38)

Burley, David V. (Archaeological Survey of Alberta)

Problems and Prospects of Tipi Ring Research Within Alberta.

Within Alberta, the tipi ring is a cultural resource management nightmare. Excavation, as mitigation, invariably provides exceptionally poor data return and leads the developer to question the necessity of the work. In considering new resource management policies for the Province, considerable introspection has been given to what has been learned of tipi rings over the past 15 years. The presented paper provides an overview of Alberta tipi ring research, an assessment of data recorded from 1500 sites and a series of potential avenues for future direction. (32)

Burton, Gaye (Simon Fraser)

Microdebitage or Geodebitage? Problems in Distinguishing Cultural from Natural Sediment Particles.

A major problem indicated in the study of the microscopic byproducts of lithic reduction is routinely distinguishing cultural from natural sediment particles. This paper is concerned with exploring this problem, and specific areas of focus include the natural occurrence of sediment particles of materials commonly used in lithic reduction, the natural reduction forces which produce particles resembling microdebitage, and diagenetic factors affecting identification. The use of controls in dealing with the identification problems is also discussed. (8)

Caballero, Evelyn J. (ECR Inc.)

The Ethnoarchaeology of Placer Mining of the Batuang Kankana-ey of Northern Luzon, Philippines.

This paper presents the results of a multi-year ethnoarchaeological study of placer mining of the Batuang Kankana-ey. The material culture of placer mining which is the primary subsistence base of the Batuang Kankana-ey is discussed and related to the individual and group decisions governing the process of placer mining. Additional topics addressed are the history and role of gold procurement in the Philippines and how this research furthers the understanding of Philippine archaeology. (55)

Callahan, M. M. (see Geig, P. R.) (11)

Camilli, Eileen L. (Bureau of Land Management)

Prehistoric use of Landscapes and the Archaeological Surface Distribution.

Patterning in the sizes of quantitatively-defined archaeological scatters is used in this paper to investigate variable histories of landscape and location use. The approach used here views such patterning from the perspective of historical accumulation of scatters. From this perspective the size distributions of archaeological scatters within a region provide evidence for histories of prehistoric group movement and the resultant accumulation of archaeological debris on a landscape. Several landscape histories including moderate and intensive reuse of landscapes are interpreted from this investigation of scatter size variation. (26)

Canouts, Veletta (Southern Illinois, Carbondale)

Stylistic Boundaries: The Structure of Information Exchange.

An approach which contrasts generative rules for motifs with those for design configuration subsumes the controversy over the roles of conscious and unconscious levels of information exchange in stylistic studies. By extension, the separate comparison of similarities and differences in the expression of motifs and design configurations between two stylistic systems yields a general model of the structure of information exchange. These similarities and differences relate to learning, influencing, imitating, substituting, and signaling behavior. Implications of this model for archaeological studies of boundary formation processes are examined. (2)

Carbone, V. A. (see Parker, S.) (41)

Carlisle, R. C. (see Andrews, R. L.) (32)

Carlson, David L. (Texas A & M)

Archaic and Later Prehistoric Adaptations to the Central Texas Uplands: Results From Recent Surveys at Fort Hood.

Recent cultural resources investigations at Fort Hood, Texas, provide the first systematic sample of upland Archaic and Late Prehistoric sites in central Texas. Previous excavations and surveys have predominantly focused upon large open sites in river valleys and rock shelters. A recently completed survey of 25,000 acres demonstrates that aboriginal use of upland areas was extensive rather than intensive. Certain areas, however, appear to have been repeatedly occupied in order to exploit lithic resources and upland game such as deer and bison. (40)

Carlson, Roy L. (Simon Fraser)

Cultural-Historical Strategy and Shell Middens.

Much shell midden excavation on the Northwest Coast has been aimed at collecting data sets of associated materials of sufficient size to permit formulation of cultural historical units. Excavation strategies used at three different types of middens—burial mounds, house sites, and stratified sites—and the problems they present to such formulations are discussed. (24)

Carr, C. (see Williams, I.) (9)

Carr, Christopher (Arkansas)

Toward a Synthetic Theory of Artifact Design.

A framework for integrating the social interaction theory of artifact style (emphasizing normative learning processes), the information exchange theory of style (emphasizing adaptive processes), and

techno-functional approaches to design, is elucidated. An approach for assigning individual, social, technological, and functional meanings to design attributes is defined by examining parallelism among the five hierarchies listed in the symposium abstract, by considering attributes to be palimpsests, and by noting how the range of variation in an attribute's states affects its position within the hierarchies. The hierarchy of manufacturing steps and that of manufacturing decisions are distinguished by contrasting additive, subtractive, and complex (e.g. weaving) art processes. (16)

Carucci, James (Southern Illinois, Carbondale)

Settlement Reorganization in an Inhabited Palauan Village.

Archaeological settlements often exhibit evidence of reorganization of large spatial areas. This site reformation behavior was documented recently in Irrai Village, Republic of Palau. Comparing the recent survey data to a 1909 map of the same village reveals that a massive rearrangement of the central stone platform and pathway complex has taken place. However, oral information concerning these site modifications contradict the archaeological evidence: several features that are thought of as very old are in fact relatively recent in origin. This paper discusses this contradiction between archaeological observation and oral history, as well as settlement reformation processes in general. (24)

Castro, Alex M. (UMARP) and Cathy Lynne Costin (UCLA)

Specialization in Local and State Ceramic Production in the Upper Mantaro Valley, Peru.

Direct (distribution of wasters and tools) and indirect (paste characteristics, standardization) evidence is examined to delimit the organization of pottery production before (Wanka II) and after (Wanka III) Inka conquest. In Wanka II ceramic production was a household-based activity, specialized at the village level. Although in Wanka III increased social stratification and regional peace were expected to promote further specialization, it appears that Inka domination did not radically affect the organization of production in local wares. Extreme standardization of Inka style ceramics and lack of Inka production debris in domestic contexts suggest manufacture for state distribution at centralized, special purpose facilities. (10)

Cavalli-Sforza, L. L. (Stanford)

Population and Individual Movement.

Migrations were popular at one time in archaeology, then they went out of fashion and "migrationism" was condemned. Yet, individuals always move around some, and displacements of groups are more rare but not really uncommon. Moreover, at times of population growth, its expansion is often a natural, sometimes unavoidable consequence. It is planned to review studies on individual mobility, and examples of population expansions and their contributions to patterns of human genetic variation will be given. (17)

Chance, M. (see Misner, E. J.) (40)

Chapman, Jefferson (Tennessee)

Fifty Years of Federal Archaeology in the Middle South: An Assessment.

In 1934, federal archaeology in the Middle South began with the initiation of reservoir projects by the Tennessee Valley Authority in the Tennessee River drainage. For the next eight years, large scale excavations generated vast amounts of data, trained a generation of archaeologists, and established a cultural/historical framework for the region. A second surge of archaeology began in the 1960s, and has grown concomitantly with federal legislation. This paper explores and assesses the achievements and contributions of this half-century of federally sponsored archaeology. (18)

Chapman, John (Newcastle upon Tyne, England)

Archaeological Survey in Europe.

The massive increase in archaeological survey in Europe has ignited a powerful information explosion, the components of which are widely scattered across the Continent. This paper asks how such information can best be synthesized and whether or not there is a sufficient degree of comparability between different surveys, at the levels of theoretical assumptions, testable hypotheses, methodology and data bases, to enable European prehistorians to answer some of the "Big Questions" in human evolution—the origins of food production, sociocultural differentiation of later farmers and development of urbanization. (15)

Chapman, Richard C. (New Mexico)

Analysis of Southwestern Archaic Lithic Technology: A Ten Year Review.

Analytical approaches for the study of Southwestern Archaic lithic technology through the last 10 years are reviewed to identify dominant problem domains, theoretical issues, methodologies and procedures which have governed research. Particular attention is paid to the results of contract

research which, while having generated the majority of analyses, are often not widely disseminated. A preliminary evaluation of progress made over the last decade with respect to dominant problem orientations governing research is attempted, with an emphasis upon identifying areas of redundancy in research effort and approach. (38)

Charles, Douglas K. (Northwestern)

Systemic Evolutionary Interpretation of Woodland Burial Practices in West-Central Illinois.

A distinction between ideology-free hunter-gatherers and ideology-bearing stratified societies defuses the theoretical basis of a developing debate between Saxes-Binfordian and structural Marxist mortuary analysis. Published applications of either approach are based on invalid assumptions equating operationally-defined variability with meaningful categories. To overcome this problem, a systemic evolutionary model is applied to Middle and Late Woodland burial mounds in west-central Illinois. Results indicate that the elaborate tomb/ramp complex of Middle Woodland is part of a ritual response to internal village fissioning stresses. However, the specific use and characterization of mounds are products of constraining tradition rather than functional requirements. (33)

Chase, Arlen F. (Central Florida)

From the Outside Looking In: Peten Perspectives on Belize.

The Peten of Guatemala presents a cultural mosaic during the Post-classic period. The regionality that is evident, however, shows striking archaeological variation in ritual and settlement patterns from similar data found in Postclassic Belize. These archaeological data in fact suggest that the central portion of Belize may have been purposely maintained as a cultural frontier by the native elites of central Peten. Careful management and manipulation of this frontier by Peten peoples allowed for their independent status through much of the Postclassic and Historic period. (21)

Chase, Diane Z. (Central Florida)

On the Frontier of the New Empire: Protohistoric Santa Rita Corozal in Perspective.

The Maya of Belize reacted to the advent of the Spaniards in different ways. Santa Rita Corozal was abandoned at first contact. The archaeological data from the site thus allow for a definition of Terminal Postclassic pottery and artifact assemblages as well as construction techniques and settlement pattern. These data strongly suggest that Santa Rita represented the political interests of its northern allies during the Late Postclassic period and that Santa Rita's response to the Spanish was conditioned by its close participation in political networks to its north. (21)

Chase, Philip G. (Arizona)

Approaches to Middle Paleolithic Subsistence.

Middle Paleolithic zooarchaeology is severely hampered by problems inherent in the nature of the sites at the present state of geochronology. Because assemblages from different sites cannot, even if geologically correlated, be assumed to be contemporary in an anthropological sense, it is impossible to reconstruct any single Middle Paleolithic subsistence system. However, by comparing the faunal data known from sites in Europe with nonfaunal data, it is possible to infer the general nature of Middle Paleolithic subsistence systems. (47)

Chatters, James C. (Central Washington)

Hunter-Gatherer Adaptations and Site Structure: An Evaluation of Dimensions.

Access to numerous alternative dimensions of site structure will allow students of prehistoric hunter-gatherer adaptation to choose methods according to the quality of available data. These aspects of adaptive strategy—mobility, predation, and technology—are isolated and their constituent elements are analyzed to identify material correlates. Those correlates are proposed as dimensions of site structure and measures of adaptation type. The utility of selected dimensions is evaluated by comparing late prehistoric assemblages from the Columbia Plateau with a model derived from ethnographies. Outcomes are discussed, especially where observations and expectations diverge. (47)

Cheek, Charles D. (John Milner Associates)

Construction Activity and Sociocultural Integration at Copan.

A question still debated among Mesoamerican scholars is the kind of sociocultural integration exhibited by the Maya. A commonsense, but also debated, measure of this aspect of culture is the amount of energy that can be consistently harnessed and expressed by a society. This paper will discuss the utility of this measure and compare the amount of construction at Copan with those few sites for which comparable information is available or can be constructed. From this comparison an indication of differential levels of control over resources and, therefore, of level of sociocultural integration can be derived. (1)

Chen, Chun (Shanghai, China)

Evolution of Paleolithic Hunting and Gathering Subsistence Strategies in North China.

Two major lithic traditions of North China are known at present by Chinese paleolithic archaeologists. Faunal assemblages of the first tradition show evidences of heavy damage and burning patterns, which suggests that the main subsistence strategy of this tradition may be hunting. Faunal assemblages of the second tradition have less broken and damaged bones which may suggest the subsistence strategy was less devoted to hunting. (47)

Cherry, John (Fitzwilliam, Cambridge)

Contribution of Archaeological Survey to European Prehistory.

Archaeological survey projects in Europe have proliferated in the last two decades, in part stimulated by the success of and borrowing the methods from surveys in the New World, but also building on long-standing and distinctive regional or national traditions of landscape archaeology. Following earlier papers dealing with specific geographical areas, this paper will present a quantitative overview of the growth of survey in European archaeology as a whole and will attempt some assessment of the extent to which the vast increase in resources devoted to survey has paid off in providing answers to high-level questions of culture process. (15)

Childs, S. Terry (MIT/Boston)

Technology and Ideology in Artifact Design of Early Iron Age Refractories in Iron Smelting.

Technological behavior involved in the design and manufacture of refractory ceramics essential to iron smelting during the Early Iron Age in East Africa is influenced by functional requirements of the smelting process, available resources, and traditions of local craft production. Ethnographic evidence of African smelting also reveals that a strong ideology surrounding the technology influences the production process and the design of some refractories. The secrecy which often encompasses the smelting process, however, will restrict the visibility of the technological and ideologically-based attributes to a select group. The behavioral meaning of these attributes must be carefully interpreted by archaeologists. (16)

Chisholm, B. (see Hayden, B.) (4)

Christenson, Lynne E. (Arizona State)

Paleoecological Modeling of Fire Adaptations by Hunters and Gatherers in Southern California.

Several references by early Spanish explorers relate two enigmatic aspects of southern California Indian subsistence. First, Indians in San Diego County were seen with large bundles of grasses (bound like sheaves of wheat) and second, deliberately set fires were a frequent aspect of subsistence activities. A botanical approach to the fire adaptation of the local ecosystem provides a paleoecological model for both hunting and gathering regimes. Previous studies on the effects of fires in Mediterranean climate ecosystems will be applied to current knowledge of the varied prehistoric groups in cismountain southern California. (36)

Ciolek-Torrello, R. S. (see Bruder, J. S.) (43)

Ciolek-Torrello, R. S. (see Halbrit, C. D.) (3)

Cinq-Mars, Jacques (Archaeological Survey of Canada, Ottawa)

East Beringian Prehistory: A Changing Search for Models.

To many archaeologists, it may appear that well over a decade of intensive search for late and not so late Pleistocene cultural remains in unglaciated Alaska and Yukon Territory has brought to light a rather impoverished, sometimes equivocal, and frequently controversial archaeological record which adds little to one's understanding of the initial phases of the peopling of the New World (*sensu lato*). A critical appraisal of the most important facets of this research together with a presentation of the results of recent investigations at the Bluefish Caves site, northern Yukon, should serve to allay fears that all these efforts were for naught. (22)

Claassen, Cheryl (Appalachian State)

Marking the Passage of Time in Shell Middens.

Analysis of shell has recently centered on seasonality. Two other aspects of time, relative chronology and the number of distinctive shellfishing seasons, have also been explored by the author. Shellfish species ratios have provided relative chronologies for North and South Carolina and Florida. A minimum number of shellfishing seasons has been estimated using a combination of data on species ratios, seasonality, mean length and presence of minor species from arbitrarily stratified column samples. Work at marine middens in North-Carolina and Gulf Florida is highlighted. (12)

Clark, G. A. (see *Coinman, N.*) (52)

Clark, Geoffrey A. (*Arizona State*)

Climate, Resource Geography and Paleoeconomy in Cantabrian Spain.

Ecological research directed toward an understanding of the resource base during the late Upper Paleolithic and Mesolithic in Cantabrian Spain has identified regional patterns in human adaptation which depart radically from the conventional picture of terminal Pleistocene hunter-gatherers known before 1980. Paleoclimatic oscillations show little direct effect on human settlement patterns and subsistence strategies even in the face of inferred major changes in resource distributions which coincide with and transcend the Pleistocene/Holocene boundary. Site distributions and settings, technologies and subsistence data are examined for the period 21,000-3,500 B.P. Directional changes in settlement and subsistence are documented and compared with an "ethnographic present" known from classical sources. The impact of domestication economies is assessed. (4)

Clary, Karen H. (*New Mexico*)

Accumulated Data: Pollen Analysis and Anasazi Subsistence in the Four Corners Area, American Southwest.

The role of the archaeobotanist is twofold—to analyze and describe plant remains from archaeological sites (laundry list) and to give the results meaning in terms of prehistoric subsistence. The description and analysis of botanical remains is a standard part of archaeological inquiry, where plant foods of economic value or potential are defined. This data is of limited use when used only in the context of the specific site or sites in question. Over the past 15 years, increases in site mitigations for the purposes of institutional research or cultural resource management have brought about numerous botanical analyses from archaeological sites in the San Juan Basin of the American Southwest. A large data base of botanical interest has accumulated. Due to standardized sampling techniques archaeological information from many sites may be reliably evaluated. As a result, regional subsistence patterns are emerging for the prehistoric era. Discussed will be aspects of Anasazi subsistence recognizable from the viewpoint of pollen analysis (i.e., resource procurement, changes in plant usage). (19)

Cobb, Charles E. (*Southern Illinois, Carbondale*)

A Model for the Organization of Production of the Mill Creek Chert Biface Industry.

Southwestern Illinois was the locus of the production of large bifaces from a local lithic resource—Mill Creek chert—in the Mississippian period. Evidence for intensive manufacture and subsequent widespread exchange of these bifaces has led some investigators to conclude that production was centrally organized by elites. Recent research suggests a dispersed pattern of production with the means of production controlled at the community level. A model is proposed where elites controlled the dispersal of bifaces, and thus access to the effects of production, rather than the means of production, may have been the major source of power for an emerging Mississippian elite class. (49)

Cohen, Barbara E. (*Southern Illinois, Carbondale*)

Measured in Metaphors: Settlement Plan and the Perception of Space.

Archaeologists can and are using settlement plans to reconstruct past behavior (and behavioral models to account for past settlement patterns), but the builders' attitudes toward space and settlement are more elusive to reconstruct. Assuming that past behavior can be inferred from settlement plans, then past perceptions can be measured in the metaphors of spatial relationships symbolically encoded in settlement plans. This paper discusses how archaeologists can begin to uncover spatial metaphors, as well as how these metaphors can be used to reconstruct impressions and attitudes of spatial use among past cultures, using an example drawn from the pioneer Illinois experience. (24)

Cohen, Mark N., Sharon Bennet, Carl Armstrong (*SUNY, Plattsburgh*) and Marie Danforth (*Indiana*)
The Colonial Period Skeletal Population from Tipu.

Analysis of the first 220 skeletons from the Colonial cemetery at Tipu reveals a pattern of death concentrated in the young adult years, but skeletons display few signs of biological insult. Genetic markers provide weak support for the hypothesis that an immigrant Maya elite ruled. Markers of nutrition suggest economic stratification cross-cutting lines of ethnic demarcation. Patterns of interment and bodily ornament suggest a population adhering to the requirements of the Catholic Church despite independence from direct Spanish rule. (21)

Coinman, Nancy, John Lindly, and Geoffrey A. Clark (*Arizona State*)

The Upper-Epipaleolithic Transition in Jordan and the Negev: A Regional Perspective.

Survey and excavation data from the Wadi el'Hasa (WC Jordan) are used to reconstruct the geography of the resource base for the Upper Paleolithic, Epipaleolithic, and Natufian time ranges. Site size and

placement characteristics, and assemblage composition in conjunction with natural science and ethnographic data allow for construction of regional settlement/subsistence models at ca. 35-30000, 18-15000 and 13-11000 B.P. These models are contrasted (1) with Marks' research in the Avdat/Aqev area (C Negev highlands, Israel), some 125 kms SW of the Wadi el'Hasa; and (2) with Binford's (1980,1982) more general theoretical statements about hunter-gatherer positioning behavior. Despite the constraints imposed by what was at times a "marginal" environment, preliminary results indicate very flexible settlement and subsistence strategies, and differences in degree rather than kind. (52)

Cook, Anita and Hell Juel Jensen (*SUNY, Binghamton*)

Small Men and Big Questions: The Role of Carved Figurines in the Huari State.

Carved and engraved lithic figurines were one of many media in which a visual dialogue was expressed that partially replaced writing during the VII-VIII century establishment of Andean polities. The data are seen as expressing a constellation of political, economic, technical, and social contexts of procurement, production, and deposition. In this paper we will further discuss the degree of visibility within and between each of these contexts. (16)

Conkey, M. (16)

Conkey, Margaret (*SUNY, Binghamton*)

Too Big a Bite? The Place of Regional Studies in Contemporary Paleolithic Archaeology.

There are aspects of regional studies that need more critical consideration. In terms of theory, such aspects include the bases for models of human spatial behavior (especially interaction); in terms of methods, the archaeological measures are still problematical. Further, the data available in Paleolithic research make adoption of models and measures challenging, if appropriate at all. A comparison of regional research for two classic European Upper Paleolithic areas will be used to exemplify the current problems and prospects for regional studies. (4)

Connor, D. (see *Marks, A. E.*) (52)

Cordell, L. (40)

Costin, C. L. (see *Castro, A. M.*) (10)

Costin, Cathy Lynne and Glenn S. Russell (*UCLA*)

Household Production and Village Specialization in the Upper Mantaro Valley, Peru.

Excavations were conducted at six archaeological sites representing pre-Inka (Wanka II) and Inka (Wanka III) periods in this highland Peruvian valley. Structures are organized into walled compounds (households) of one to six buildings. The distribution of agricultural tools indicates all households were involved in agricultural production. In contrast, the distribution of manufacturing debris suggests craft production was specialized. Some production (metal, weaving) was concentrated in elite households at all sites, while other items (ceramics, stone tools) were produced by both commoner and elite households, but at a limited number of sites. Evidence for production in non-domestic contexts was also recovered. (48)

Cowgill, G. L. (9)

Cowgill, George L. (*Brandeis*)

Quantitative Methods.

Currently used general approaches, specific techniques, and some of their accomplishments are reviewed and evaluated. Major unresolved problems are discussed, including those of interpreting statistical results in archaeologically and anthropologically meaningful ways. Further steps that seem most necessary or most promising at this time are suggested. (14)

Crane, Cathy J. (*Southern Methodist*)

Economy and Ecology at Cerros, A Late Preclassic Maya Site.

Pollen and macrobotanical remains from the Late Preclassic occupation at Cerros are used to reconstruct subsistence and paleoecological conditions. The ubiquitous presence of maize remains demonstrates the importance of this crop. Other economic plants represented include squash, beans, cotton, chile pepper, nanche, coyol palm, siricote, cacao, papaya and hackberry. Reconstruction of the past environment includes quantitative studies of modern vegetation communities and collection of modern pollen rain samples. In addition, principal-component analysis is used in the interpretation of the archaeological pollen assemblage. (19)

Creamer, Winifred (*School of American Research*)

The Upper Klethla Valley: Computer Generated Maps of Site Location.

Computer-based Geographic Information Systems techniques, together with survey, were used in the Upper Klethla Valley, Arizona, to investigate warfare in the region between A.D. 1050 and 1300.

Previous research in Long House Valley, immediately to the east, indicated a change in settlement pattern around A.D. 1150. At that time sites began to cluster around large defensible "focal" sites, apparently in response to intergroup raiding. To determine whether the conflict was localized or regional, the GIS was used to generate maps pinpointing hilltops and vantage points likely to have harbored defensive occupations. The production of the maps, trends in data analyzed to date, and possible refinements of variables used are discussed. (6)

Cross, John R. (Massachusetts)

Craft Specialization: Contrasts Between Non-stratified and Stratified Societies.

In recent years, archaeologists have become increasingly aware of the limitations of band-tribe-chiefdom or mode-of-production categories for understanding variation in the organization of production within non-stratified societies. "Craft specialization" and "surplus" are now terms frequently applied to hunter-gatherers. However, craft specialization among hunter-gatherers and within state-level society reflect differences in kind, not simply in degree. Specialization is sustained and transformed through fundamentally different social processes in each instance. This paper uses the ethnographic and archaeological literature to derive a model for Late Archaic lithic tool production in the Northeast. (49)

Crown, Patricia L. (Arizona)

Classic Period Hohokam Land Use and Settlement Along the Gila River.

Surveys and excavations along the Gila River between Florence and Casa Grande have provided sufficient information on habitation site and agricultural feature location to allow preliminary assessment of land use and settlement patterning. The location of permanent habitation and field house sites relative to irrigation, dry farming, and floodwater farming features suggests differential control of farmed land and decreasing intensity of land use with distance from the Gila River. These patterns of land use within the diverse subsistence system have implications for our understanding of the structure of Hohokam economy in this area. (43)

Crumley, C. L. (15)

Crumley, C. L. (51)

Culbert, T. Patrick and Laura J. Kosakowsky (Arizona)

The Demography of Central Tikal.

During the fourteen years of the University of Pennsylvania's Tikal Project, hundreds of structures were sampled by excavation and test pitting. The complete chronological results (based upon ceramic evaluations) of all operations within the 16km² site map are summarized in this paper. The data provide a solid foundation for the discussion of relative population changes through time. In addition, the changing patterns of population in relation to such variables as ecological zone and distance from site center are examined. (39)

Cully, A. C. (see Donaldson M. L.) (3)

Cully, Anne C. and Mollie S. Toll (New Mexico)

Archaic Subsistence and Seasonal Population Flow, Northwest New Mexico.

Vegetative diversity (variety of exploitable plant species) may not be the salient clue to the recurrent association of Archaic habitations with upland dunes although diversity considered on a regional scale may be a good discriminating tool for predicting Archaic population flow in relation to resource procurement. A case for seasonal population movement in the Four Corners area is constructed on the basis of patterning of available floral resources. Archaeological evidence, including botanical remains, points to short-term occupation of dune sites during summer months. The distance of habitats able to provide alternative resources in winter months (or under poor climatic conditions) is seen to require wholesale movement to these areas. Closer juxtaposition of diverse habitat types elsewhere may have resulted in entirely different demographic patterns. (38)

Custer, J. F. (see Doms, K. R.) (12)

Custer, Jay F. (Delaware)

Late Woodland Ceramics and Social Boundaries in Southeastern Pennsylvania and the Northern Delmarva Peninsula.

When design motifs and "grammars" of Late Woodland ceramics in southeastern Pennsylvania, northern Delaware, and northeastern Maryland are analyzed, two distinct interaction zones are defined. One includes northern Delmarva and southeastern Pennsylvania. Corresponding to the Minguannan archaeological complex, it is similar to complexes of the Delaware Valley, coastal New England, lower Delmarva, and Virginia Coastal Plain. The second includes the Shenks Ferry complex,

more similar to complexes to the north and west. The zones show different settlement, subsistence, and organizational patterns. A major ethnic/cultural boundary is proposed with Minguannan-related complexes associated with Algonkian speakers and Shenks Ferry-related complexes with Eastern Siouan Speakers. (5)

D'Altroy, Terence (Columbia)

The Effects of the Inka Conquest on the Wanka Domestic Economy.

This paper presents a summary discussion of the domestic economy of the late prehistoric Wankas prior to and under the Inka empire. Patterns of domestic activities within elite and commoner households are compared for Wanka II (A.D. 1250-1460) and Wanka III (A.D. 1460-1533) communities. Functional analyses of ceramics, access to goods, and use of space indicate that the impact of the Inka conquest on household activities was limited. Although social stratification increased, the basic organization of production and consumption was remarkably constant, suggesting that the Inka relied on existing relationships in their dealings with subject populations. (10)

Damp, Jonathan E. (Errol, New Hampshire)

Domestic and Community Production in the Early Northern Andean Village.

Patterns in prehistoric architecture and domestic refuse convey information on the early Valdivia (3300-2300 B.C.) house and household production. Material is analyzed from several house structures and occupational surfaces from Real Alto (OGSECH-012) of coastal Ecuador. Tools, paleobotanical specimens, faunal remains, etc., provide data on economic pursuits of small nuclear family units and social organization is implied in domestic spacing. A model is derived which accounts for the change in relations of social and economic production and the development of hierarchical social groupings from egalitarian structures in the early Valdivia community. Methodological implications are also explored and indicate that the household unit is well suited for the study of site formation processes, paleoeconomy and social spacing. (48)

Dancey, William S. (Ohio State, Columbus)

Archaeological Survey in Central Ohio: The 1970s.

This paper analyses the surface survey data produced in central Ohio during the 1970s, a period of vigorous CRM activity largely sponsored by the Ohio Historic Preservation Office. These data are found woefully inadequate for most management purposes and for all but the most general academic research questions. The reasons for this inadequacy are identified and suggestions are made for improving surface survey in this area. In particular, it is argued that a descriptive language is possible which permits an unambiguous, detailed, and non-controversial characterization of the archaeological record based on surface examination. (26)

Danforth, M. (see Cohen, M. N.) (21)

David, N. (48)

David, Nicholas (Calgary) and Harvey M. Bricker (Tulane)

Perigordian and Noaillian in the Greater Perigord.

The paper examines the economics as well as the typological and distributional aspects of an apparent co-existence of two very different tool-making traditions, the Perigordian and the Noaillian, for over a millennium in the same broad region of southwestern France. The interpretation presented, which involves disruptive intrusion, acculturation, and eventual assimilation, is based on a comparative study of several dozen sites. It differs from other recent interpretations primarily because it includes critical evidence from occupations at the Abri Pataud that represent the later Middle Perigordian, Early and Late Noaillian, and the later Upper Perigordian. (4)

Davis, J. O. (see Durand, S. R.) (41)

Dean, J. (44)

Dean, Jeffery S. (Arizona)

Intensive Survey of Long House Valley, Northeastern Arizona.

100% surveys characterize site populations rather than populations of areas that comprise the strata of sample surveys. Complete coverage provides populations of sites, not areas, that can be sampled for additional, specialized surveys or for excavation. A 100% survey of Long House Valley facilitated the resolution of research problems that could not have been so thoroughly elucidated with sample survey data: shifts in settlement and subsistence systems, changes in land use, boundaries and structure of Tsegi phase settlement clusters, evaluation of techniques used to analyze sample survey data, and predicting site distributions in other areas. (50)

DeBloois, E. I. (3)

DeBoer, W. (48)

DeCicco, G. (34)

de Laguna, F. (13)

Del Bene, Terry A., and William Branchard (Bureau of Indian Affairs)

What Mean these Cheno-Ams? Archaic Period Adaptations in Northwestern New Mexico as Evidenced on the Navajo Indian Irrigation Project.

The Navajo Indian Irrigation Project has provided more information concerning the Archaic Period than any other project in the San Juan Basin. This paper attempts to synthesize the disparate data base. The focus of the paper is to evaluate the data base in terms of existing models of Archaic adaptation and culture history. Suggestions for future research are provided as well as an analysis of the methods employed and how these methods have affected the resultant models of Archaic adaptation. (38)

DeMarcey, Gary B. (Texas A&M)

Possible Causes for Bison Bone Breakage at an Antelope Creek Focus Site.

Excavations at Landerin Mesa (41OL2) were conducted under the auspices of the Texas Historical Commission in the spring of 1981 and 1984. Several slab-lined structures were uncovered in strata dating from ca. 1250-1500 A.D. Faunal remains collected from the site indicates heavy reliance on bison hunting. The condition of the bison bone is comminuted with entire elements and articular ends being rare. This paper investigates possible causes for the quantity of bone breakage such as bone grease manufacturing, marrow extraction, human trampling and carnivore gnawing. (7)

DeNiro, M. J. (see Ambrose, S. H.) (56)

DeNiro, Michael J. (UCLA)

Marine Food Sources for Coastal Peruvian Camelids: Evidence and Implications.

Combined carbon and nitrogen stable isotopic analysis of collagen from bones of camelids excavated at Chilca, ranging in age from 950 to 260 years B.P., suggests a considerable proportion of marine foods in the diets of some individuals. Analysis of seal and deer bones excavated at Chilca indicate fully marine and terrestrial diets respectively, suggesting that *post-mortem* alteration of bone collagen isotope ratios has not occurred at these sites. These observations suggest that some prehistoric camelids lived (and fed) for a considerable proportion of their lives on the coast, which, if true, would have significant biological and anthropological implications. (42)

Diamanti, Melissa (Penn State)

Household Composition and Organization.

The extended family model widely used in the reconstruction of Lowland Maya social organization is not sufficient to explain the larger household compounds found in the residential zone at Copan. New models of larger social units such as lineages or clans are drawn from ethnographic data on societies at a comparable level of socio-political and economic development. These cases are examined with reference to the composition of households and the social ties on which they are organized. The models are then tested against the architectural and artifactual data from excavated house compounds at Copan. (1)

Dibble, Harold L. (Pennsylvania)

Reduction Sequences in the Manufacture of Mousterian Implements of France.

New data from the classic sites of Combe Grenal (Dordogne) and La Quina (Charente) suggest particular reduction sequences that were used in the manufacture of Mousterian implements. Tentative models of these reduction patterns will be presented with discussion of their implications for the interpretation of Mousterian variability in this region. (4)

Dickemann, Mildred (Sonoma State)

Natural Disturbance and Human Response in Evolutionary Reconstruction.

In the last decade, ecologists have recognized that natural disturbance has been a recurrent aspect of most ecosystems. This has led to a revision of succession theory and new attempts to specify biotic responses, involving both populations and behavioral ecology. An overview of the ecology of natural disturbance and response provide a framework useful in hypothesizing past human demographic and cultural responses to environmental perturbations. More accurate reconstruction of past human population growth and cultural evolution, including proximate causes of the cybernetic aspects of these processes, should result. (17)

Dickinson, N. S. (see Kirkorian, C. S.) (5)

Diehl, Richard A. (Missouri, Columbia)

Teotihuacan's Demise and Its Aftermath in Central Mexico.

This paper examines two facets of Teotihuacan's decline after A.D. 600: (1) the historical process involved in the city's demise and the rise to power of new centers, and (2) the processual explanations of why these events occurred when they did. Teotihuacan's decline was basically due to complex local economic and political factors and can be comprehended by examining the reactions of various socio-economic groups to the decline process. El Tajin and Cholula took immediate advantage of the situation while new foci of political and economic power such as Xochicalco and Tula initiated their growth cycles somewhat later. (20)

Dillehay, T. D. (see Netherly, P. T.) (48)

Dillehay, Tom D. (Kentucky)

The Early Pebble Tool Culture at Monte Verde, Chile.

Recent excavations at Monte Verde have recovered edge-battered and percussion-split pebble tools in direct association with scatters of carbonized wood and charcoal. These materials were buried in a gray basal sand deposit about 2m below the younger 13,000 B.P. component. Radiocarbon dates derived from charcoal and wood were older than 33,000 B.P. The results are evaluated and interpreted in light of the later materials and of data from other sites in South America. (31)

Dincauze, Dena F., and David M. Lacy (Massachusetts)

Hardscrabble Archaeology: The Northeast Under Federal Mandates.

The northeast regional archaeology moved from museums to academe in the 1960s and in the 1970s was professionalized by the federal requirements of resource management. Substantive emphases changed from chronology and taxonomy based on site investigations to humanistic and scientific interpretation of the regional archaeological record as revealed by quantifiable survey data. Environmentalism matured to human ecology as concern for social organization and process emerged. Historical archaeology blossomed and, along with prehistory, gained broad public support. However, the full promise of conservation archaeology has not been met, analysis of the achievements and problems indicates why. (18)

Dirst, Victoria A. (Wisconsin, Oshkosh)

Wisconsin's PaleoIndians.

Wisconsin's PaleoIndians are becoming better known as a result of increased studies of private collections coupled with recent archaeological fieldwork. Through fluted Clovis-like points are present, late PaleoIndian artifacts are much more abundant. The makers of Scottsbluff and Agate Basin points continued to use materials from distant sources, but they also began to produce quantities of tools made of local rhyolite, along with probably the earliest copper tools. By using the lithics it may be possible to identify societies and the extent of their territories. (35)

Dittert, A. E. (43)

Dodd, W. A. (see Lanier, G.) (8)

Dodd, Walter A. (Utah)

The Composition of Gear Taken on Guarijio Trips.

A record is presented of several excursions originating from two Guarijio settlements in northern Mexico. Information is furnished on the personnel involved, motives for travel, and length and duration of trips. Comparisons between the inventories of items accompanying each trip and those items returned provides evidence for processes affecting site structure. The purpose of this exercise is: (1) to offer basic data on how sedentary horticulturalists organize gear for journeys away from home, and (2) to test the cross-cultural validity of propositions suggested by Lewis Binford's account of forty-seven trips among the Nunamiut. (2)

Doelle, William H., Henry D. Wallace, and Frederick Huntington (Institute for American Research)
Classic Period Community Structure in the Tucson Basin.

Recent survey and excavation have made it apparent that the transition to the Classic period is more complex than previously recognized. The process begins with a major reorganization between the Early and Middle Rincon subphases. The second large-scale change occurs between the Late Rincon subphase and the Tanque Verde phase. Changes in community structure and regional settlement pattern are considered from the Middle Sedentary through Late Classic periods. (43)

Doleman, W. H. (see Windes, T. C.) (3)

Doleman, William H. (New Mexico)

Quantitative Methods in the Study of Inter-Assemblage Variability.

Three general issues important to quantitative studies of variation among chipped and ground stone assemblages and their implications for understanding the Southwestern Archaic are discussed. These include: (1) behavioral interpretation—should variability be viewed as “cultural”, temporal, functional, or organizational? (2) archeological methodology—what aspects of variation are relevant (e.g. assemblage “types” vs. covariation)? What are the effects of factors such as sample size and reoccupation? (3) statistical considerations—which multivariate techniques are best suited and what assumptions need to be met? Results from two New Mexico surveys are discussed. (38)

Doms, Keith R. and Jay F. Custer (Delaware)

Seasonality Analysis of Prehistoric Oyster Utilization in the Upper Chesapeake and Delaware Estuaries, Atlantic Coast, Eastern U.S.

Techniques from artificial mariculture of oysters can be used to accurately identify their season of death. The technique focuses on growth rings on the shells' hinge area and was applied to shells from over 30 prehistoric middens on the upper Delmarva Peninsula. Samples ranged in age from ca. 700 B.C. to A.D. 1400. The overwhelming majority of samples were collected in winter and early spring. Middens also often included stored plant food remains. Oysters, therefore, were consumed only during seasons of otherwise low food resource productivity and their utilization was probably a consequence, rather than a cause, of sedentary lifeways. (12)

Donaghey, Sara (Nohmul Project) and Norman Hammond (Rutgers)

Excavation and Research at Nohmul, Belize, 1985.

The third season of field research at the Preclassic and Classic Maya center of Nohmul included settlement mapping, test excavations in the residential areas and surrounding raised-field networks, and major excavations in the ceremonial center. Problems relating to the Terminal Formative and Terminal Classic florescences of Nohmul were addressed and are discussed, together with recent information on the earlier foundation of the settlement in the Early or Middle Formative and an apparent decline in community size and complexity in the Early Classic Period. (39)

Donahue, Randolph E. (Michigan State)

Interpreting Site Function: Microwear Analysis of an Epigravettian Level at Paglicci Cave, Italy.

Paglicci Cave is one of the most important Paleolithic sites currently being excavated in Europe. A microwear analysis of level 4a (11,950 ± 190 B.P.) was performed. A typical variety and distribution of technical types were recovered, yet the microwear analysis indicated a dominance of meat butchering accompanied by substantial hide working activities. A hunting camp and observation post was proposed as the site function for this level. The proposition was tested and supported by the faunal assemblage. It is suggested that microwear analysis can be another instrument, accompanying faunal analysis, for the interpretation of site function. (57)

Donaldson, Marcia L. (Arizona State), Anne C. Cully (New Mexico), Mollie S. Toll (New Mexico), and Klara B. Kelley (Albuquerque)

Estimating Prehistoric Agricultural Potential: An Interdisciplinary Approach.

Navajo runoff agriculture as practiced today is particularly valuable in establishing baseline data on requirements for successful prehistoric agriculture in northwest New Mexico. To roughly estimate the amount of arable land and prehistoric productivity in the Bis sa'ani Community (A.D. 1100-1200), we combined interviews with Navajo farmers of the area, environmental and ecological observations (including hydrologic, physiographic, soil and vegetation characteristics) and ethnographic information from previous studies of southwestern runoff agriculture. Resulting estimates of arable land and productivity were compared to estimates of prehistoric population size based on archaeological evidence. (3)

Doran, James E. (Essex)

Computer Modeling in Archaeology.

This paper reviews the progress that has been made in the application of computer modeling techniques to the solution of archaeological problems. Although there have been a substantial number of successful projects, it is apparent that computer modeling is still neither fully reliable nor fully understood in the archaeological context. A key issue is the adequacy or otherwise of the repertoire of computational concepts and techniques available to support modeling. The increasing emphasis on distributed systems in artificial intelligence studies and in computer science generally promises a major and relevant enhancement in this repertoire. (9)

Dorn, Ronald I. (UCLA) and Douglas B. Bamforth (UCSB)

The Nature and Antiquity of the Manix Lake Industry.

The Manix Lake Industry has been argued to represent a Late Pleistocene occupation of the California desert, but the data supporting this theory have never been published. This paper presents new information gathered from four sites in and near the Manix basin for the Intermountain Power Project which strongly indicates that the proposed industry is relatively recent quarry debris. However, the results of a new dating technique, cation-ratio dating of desert varnish, provisionally indicate a human presence in the Manix basin for the past 20,000 years. The extensive support for this dating technique is summarized here. (35)

Douglass, Amy A. (Arizona State)

The Pottery of Rowe Ruin: A Test of the Northern Rio Grande Ceramic Sequence.

Rowe Ruin, which lies 5 km east of Pecos, was originally thought to predate its more famous neighbor. Recent data show, however, that Rowe was contemporaneous with the early occupation of Pecos. Rowe therefore provides an excellent case study for testing and further refining the earliest portion of the ceramic chronology developed by Kidder and subsequent researchers. The distribution of ceramic types associated with Rowe's masonry and underlying adobe components are compared. A design element analysis is also described, in which temporal changes in designs at Rowe are compared to documented trends from other parts of the plateau Southwest. (11)

Downer, Alan S. (Advisory Council on Historic Preservation)

The Contribution of Contract Archaeology: A Citation Analysis.

Contract archaeology is often criticized for being merely a non-scientific collection of artifacts using archaeological methods from sites threatened with destruction. Or it is criticized for failing to make theoretical and substantive contributions commensurate with the level of funding available in the contract sphere. A citation analysis of national and major regional journals challenges this negative evaluation of contract archaeology's contribution. Contract archaeology is making substantial substantive, methodological, and, in some regions at least, major theoretical contributions to American archaeology. (18)

Doyel, D. E. (see Laczko, G.) (43)

Doyel, David E. (Pueblo Grande Museum) and Frank Fryman (Bureau of Indian Affairs)

Federal Archaeology in the American Southwest.

The organization and conduct of archaeological research in the American Southwest has changed dramatically during the past several decades. Current research is dominated by Cultural Resource Management Programs and by Federal and State operated Historic Preservation agencies. The theoretical and conceptual shifts taking place in American archaeology between 1950 and the present are mirrored in the development of contract archaeology. A historical perspective is employed to discuss archaeological research in the Southwest during this time period. Issues such as shifting research goals, increased funding, institutional frameworks, and cultural values will be discussed. (18)

Drass, Richard R. and Timothy G. Baugh (Oklahoma)

Pottery and Cultural Complexes in Western Oklahoma: Investigations at the Heerwald Site (34CU27).

Recent definitions of Plains Village complexes in western Oklahoma have identified primary temporal distinctions in the archaeological record. Of primary importance in the chronological ordering of archaeo-logical complexes has been the percentage of cordmarked pottery at villages. Sites with high percentages of cordmarked wares are considered early and those with less are late. However, recent investigations at the Heerwald Site (34CU27) provide evidence that this classification scheme is not appropriate for villages in the mixed grass prairie of far western Oklahoma. The possibility of a separate Early Plains Village complex distinct from Washita River phase in western Oklahoma is discussed. (45)

Dreiss, Meredith (Texas, San Antonio)

Trace Element Analysis of Colha Obsidian.

X-ray fluorescence analysis of obsidian from sites in northern Belize have revealed the geological origins for this widely distributed trade item. Data emerging from these studies suggests an interesting pattern for the diachronic change in procurement of obsidian from the major sources in highland Guatemala. At Colha, obsidian occurs throughout the sequence, from the early Middle Preclassic through the Early Postclassic. Trace element studies of 54 dated obsidian specimens suggests that three major Guatemalan sources—Rio Pixcaya, El Chayal, and Ixtepeque—dominate at different time periods. Comparative analysis with other Belize sites substantiate this tentative pattern. (54)

Dumont, John V. (Oxford, England)

Tool Function Vs. Typology: The Implications of the Star Carr and Mount Sandel Microwear Studies.

The microwear examination of the lithic artifacts from the British Mesolithic sites of Star Carr (Yorkshire) and Mount Sandel (Northern Ireland) has enabled an investigation of: (1) the functional similarities and differences of particular artifact types found at both sites, (2) functional differences within specific artifact types, and (3) the variety and relative frequency of the activities represented at each site. The significance of the above conclusions with respect to tool-using behavior and site function will be discussed. (52)

Dunnell, R. C. (29)

Dunnell, Robert C. (Washington, Seattle)

The Interpretation of Low Density Archaeological Records from Plowed Surfaces.

Unlike deflated surfaces, where observable material may comprise a population, the surface of plowed fields constitutes a sample of a much larger volume: the plowzone. The effects arising from this source are explored for defining "site" boundaries, estimating composition of assemblages, and interpreting isolated artifacts and very low density clusters. Two 20% surveys of the same 80 acre tract in southeast Missouri are used to illustrate the principal issues. (26)

Durand, Stephen R., and Jonathan O. Davis (Desert Research Institute)

Archaeological Data Analysis and the Microcomputer: Problems and Potentials.

The large data sets, common in archaeological data analysis, can be problematic on a microcomputer given memory and processing speed limitations. The addition of memory boards and numeric processors are only a partial solution to these problems. Callable assembly language routines that manage large blocks of memory are one solution to these problems when writing one's own applications. This approach is illustrated in a useful program that produces three dimensional convergent perspective views on screen, plotter, or printer as stereo pairs or single images. Another approach is to purchase data analysis software, which has only recently become available. The SYSTAT software package is favorably reviewed and its use illustrated with a large data set from the Rio Puerco Valley, New Mexico. (41)

Dwyer, Edward B. (see Wheeler, J. C.) (42)

Earle, T. (44)

Earle, Timothy (UCLA)

Contexts for Late Prehistoric Exchange in the Andes.

To understand household production and use, the household's position within exchange systems must be studied. This paper summarizes the evidence for exchange in three commodity groups—subsistence goods, craft goods, and wealth. Prior to Inca conquest limited exchange existed in craft goods and wealth. Following conquest, this exchange continued with little change. Only state controlled products, especially Inca ceramics and metals, show significant increases in exchange. This paper investigates why administered exchange developed without a corresponding development in marketing. (10)

Eaton, Jack D. (Texas, San Antonio)

Architectural Studies in the Monumental Center at Colha, Belize.

Limited investigations at the main mound within the monumental center at Colha have revealed a sequence of superimposed formal constructions. Selective excavations and the documenting of vandal's tunnels that bore deep within the mound have provided information on the sequence of building forms and probable function that span the Late Preclassic to Terminal Classic periods. A study is made of this multi-structural building and its relationship to nearby structures forming a precinct within the monumental center. The function of this precinct within the center and the Colha settlement will be considered. (54)

Ebert, James I. (New Mexico)

Modeling Human Systems and "Predicting" the Archaeological Record: Unavoidable Links Between Theory and Method.

Contemporary archaeological survey can be applied directly to "models" which either will explain past episodic behavior, or allow prediction of where other sites are or are not. The thesis of this paper is that the organization of human settlement, mobility, and technological systems, as well as the natural processes that separate the archaeological record from those systems, must be modeled first before the mechanisms behind the patterning in the archaeological record can be understood and the data collection methods used for either explanatory or management purposes devised. (26)

Fash, William L.

Edgar, R. (see Andrews, R. L.) (32)

Effland, R. W. (see Green, M.) (58)

Eighmy, J. L. (see Hathaway, J. H.) (40)

Eisenberg, Leslie E. (New York)

New Perspectives on Mississippian Adaptation, Subsistence, and Settlement in the Southeastern United States.

Even though the data base which derives from earlier archaeological investigations in the Southeast is biased in favor of large, mounded Mississippian sites, it is often uncritically employed to reconstruct subsistence and settlement for the entire spectrum of Mississippian period sites. Recent survey and excavation undertaken outside of these "typical" Mississippian floodplain locations suggest that descriptions of subsistence and settlement strategies often oversimplify and, in some cases, incorrectly represent the range of geographical and temporal variation apparent within late prehistoric adaptive strategies. (34)

Eldredge, N. (17)

Ensor, H. Blaine (Texas A&M)

Lithic Craft Specialization in the Southeast: Data from the Lubbock Creek Locality.

Evidence from the Lubbock Creek locality in west-central Alabama suggests that a Mississippian microdrill industry was established by A.D. 1000. Elements of the microdrill industry are described. These include cores, blades, microdrills, and by-products of microdrill manufacture and use. A manufacturing sequence is documented which reflects blade production, bifacial reduction of blades in microdrills, serviceable microdrills, and broken or discarded microdrills. Microdrill manufacture and use are discussed with regard to degree of lithic specialization and shell bead manufacture. Finally the data is used to address problems of Late Woodland-Mississippian transition in the Southeast. (34)

Ericson, Jonathon E. (UCI)

Behavioral Implications of Decoupling Ceramic Design Variability and Marital Residence Patterns by Strontium Isotope Characterization.

Ceramics and design variability have been used to suggest marital residence patterns, and in turn, to infer information flow between prehistoric groups. Strontium isotope characterization of human tissues, a new technique under development, will allow us to determine marital residence patterns directly through scientific analysis. The nature and behavioral implications of the variability in prehistoric ceramic designs can be studied independently. The new techniques will be described and the impact of this innovation on ceramic design analysis will be discussed. (27)

Evans, Susan T. (Catholic)

Siguatcepan: An Aztec Period Rural Village in the Teotihuacan Valley.

Siguatcepan enjoyed its greatest extent and prosperity during the Aztec period, when it flourished as a center for the production of obsidian, textiles, and other goods, as well as crops from the agricultural terraces over which its several hundred houses were distributed. Recent excavations at this site permit a rare detailed view of rural life in the Basin of Mexico during the Aztec period, a cultural horizon for which most of our information is derived from elite and urban settings. The development of the site is traced from its 12th century origins to the 1603 Order of Congregation which mandated its abandonment. (28)

Eve, R. A. (see Harrold, F. B.) (2)

Falconer, Steven E. (Arizona)

A Reconsideration of the Significance of Neutron Activation Data in Pottery Production/Distribution Studies.

Provenience studies of pottery production and distribution often rely on Neutron Activation Analysis as a primary analytical tool. However, the fundamental assumption that neutron activation data clearly reflect differences between clays and clay sources has gained archaeological acceptance without prior investigation. A review is presented of an experimental assessment of the extraneous influence of variable tempering on trace element concentration data. The results and implications of this analysis are discussed regarding archaeological provenience studies generally. Particular reference is made to a current case study of the economic role of small villages in early urbanized societies in the Near East. (11)

Fash, William L. (Northern Illinois)

Evolution of the Copan Polity.

Evolution of the Copan polity is shown to be non-linear, with a long break interrupting two progressive evolutionary trajectories. Attention is focused on the Classic Period sequence, during

which time marked increases in population size and societal complexity occur. The data from the complete surface mapping of the Copan Pocket settlements and a problem-oriented settlement history excavation sampling program are compared and contrasted with those obtained from studies of dynastic history and elite power politics. A multi-variant model is used to demonstrate how the cultural/ideological subsystems interacted with and provoked changes in the economic and ecological subsystems. (1)

Fedick, Scott L. (Arizona State)

Prehistoric Land Use Patterns in the Upper Belize River Valley.

One of the primary goals of the Belize River Archaeological Settlement Survey is to examine changing relationships between prehistoric settlement patterns and natural resources, and to relate these to social and economic development of the Upper Belize River Valley, as well as the region as a whole. Toward these ends, a detailed soil survey of the study area was conducted, supplementing previous large scale, less detailed work. Considerable variability in soils within the area is documented and the implications for agricultural development are discussed. Coupled with prehistoric and modern settlement data, changing land use patterns are traced through time and related to variability and change in household organization and higher order scales of social and economic interaction. (21)

Feinman, G. M. (23)

Feinman, Gary M. and Linda M. Nicholas (Wisconsin, Madison)

Labor, Surplus, and Production: A Regional Analysis of Formative Oaxacan Socioeconomic Change.

In Early and Middle Formative period Oaxaca, Mexico, the transition from a non-stratified to a stratified social system was accompanied by important shifts in economic production, commodity distribution, and settlement pattern. Regional archaeological studies suggest that the non-stratified, pre-urban socioeconomy was not characterized by insufficient agrarian resources, but rather by limited labor supplies and the inability to produce significant agricultural surpluses consistently. To underscore these processual differences and to clarify the nature of the earlier, non-stratified socioeconomy, changes in production potentials are tracked diachronically and compared with shifts in available labor and the access to non-agricultural goods. (49)

Ferguson, T. J. (New Mexico)

The Archaeology of Soil and Water Control on the Zuni Indian Reservation.

The archaeology of soil and water control on the Zuni Indian Reservation is examined using archaeological data, documentary history, and Zuni ethnohistory. Available archaeological data concerning soil and water control are described and analyzed. Prehistoric and historic strategies of soil and water control are compared. Historic processes of change in the technology of soil and water control are discussed in relation to corresponding changes in overall settlement patterns. A comparison of archaeological and ethnohistoric data is used to identify problems in the archaeological identification of some forms of soil and water control due to poor preservation. (3)

Ferguson, Terry A. (Wofford)

Use of Geographic Information Systems to Recognize Patterns of Prehistoric Cultural Adaptation.

GIS is an expedient and efficient tool for distinguishing the important elements and relationships in biophysical environmental contexts. This paper illustrates this point using prehistoric data from the uplands of the Big South Fork drainage of the Cumberland Plateau of Tennessee and Kentucky. The method of analysis permits the simultaneous characterization and comparison of any number of selected parameters. Only five are used in this study to show why prehistoric peoples selected and utilized particular site and situational contexts. The beauty of the method is its open-ended application. (6)

Fernstom, Katharine W. (Southern Illinois, Carbondale)

Manipulating Energy: The Spatial Organization of Exchange Facilities.

Settlements are loci for activities related to material and information exchange. Consequently, settlement plans may provide information about the organization of exchange networks. People's abilities to manipulate energy in the form of natural and social resources affect the organization of exchange networks. Data from New Guinea suggest the inhabitants' abilities to manipulate raw materials, finished products, information, and manpower correlate with their access to spatially and architecturally defined exchange facilities, and with the spatial distribution of exotic goods deposited within the settlements. This paper suggests that associations between facility remains and artifact distributions can yield information about prehistoric exchange behavior. (24)

Ferring, C. R. (45)

Fish, P. R. (see Fish, S. K.) (50)

Fish, Paul R., Suzanne K. Fish and John H. Madsen (Arizona)

Spatial, Functional, and Social Differentiation in a Tucson Basin Classic Community.

A large site with an adobe mound and multiple compounds is the central focus of a Classic Period community encompassing over 250 sites and 35 square miles. This community represents demographic reorganization and contrasts with long term stability in adjacent parts of the region. Total coverage survey of 130 square miles allows definition of community boundaries and recognition of topographically and functionally discrete site types within it. Intersite relationships within the complex are also analyzed by reference to spatial arrangements and variability in size, internal features and artifact assemblage. (43)

Fish, S. K. (see Fish, P. R.) (43)

Fish, Suzanne K., Paul R. Fish and John H. Madsen (Arizona)

Analyzing Regional Agriculture: A Hohokam Example.

A wide variety of Hohokam agricultural sites and techniques have been recorded in total survey of over 35 sq.mi., near Tucson, Arizona. Excavated fieldside processing areas, pollen samples from farming features, and associated artifacts identify corn and agave as important crops. Interpretation of results illustrate the advantages of full coverage data for understanding agriculture in a regional context. Distributional analysis enables correlation of land use over time with environmental variables and habitation patterns. Measured extant and spatial relationships of cultivated loci provide a basis for assessing production potential, labor requirements, transportation costs, and other aspects of subsistence and economy. (50)

Fladmark, Knut R. (Simon Frazer)

The Archaeology of British Columbia, 1970-1985.

In the last 15 years almost 200 significant site excavations and the production of more than 1500 major published and unpublished reports have vastly increased the archaeological data base for virtually all portions of the nearly 1 million square kilometer area of British Columbia. Radiocarbon dated cultural chronologies are now extended back to 10,000 B.P. or more for both coastal and interior regions, and major advances have been made in processual, methodological and resource management areas. This paper will describe highlights of British Columbia archaeology over the last 15 years, in an effort to demonstrate the maturing status of provincial prehistory within the overall discipline. (22)

Foley, Robert A. (Durham, England)

Forager Spatial Ecology: Hierarchical Structure in the Regional Archaeological Record.

Ethnoarchaeology has exposed the structure of the archaeological record at a small spatial and temporal scale. In contrast off-site archaeology has shown that at a regional level archaeological material is ubiquitous and continuously distributed. Future developments in the archaeology and ecology of foraging populations require the integration of these radically different scales of archaeological process. This paper uses ecological principles and middle range theory to elucidate the hierarchical spatial structure of the archaeological record, and discusses the implications for studies of hunter-gatherer adaptation. The archaeological record of tropical Africa provides the empirical framework. (47)

Ford, Anabel and Maureen Carpenter (USCB)

Belize Valley Maya Settlement Pattern Chronology and the Implications for the Development of the Central Lowlands.

The Belize River Archaeological Settlement Survey, situated within 60km of the major core area center of Tikal, provides important comparative chronological and settlement pattern data for determining economic and political relations between the core area and its peripheries. Residential unit excavations provide a foundation for examining changes in occupation over time. Comparison of general environmental characteristics with settlement distributions, composition, and proximity to centers in the Belize Valley will be contrasted with comparable data from the core area in an effort to understand the integration of the Central Maya Lowlands. (21)

Ford, Pamela J. (Washington, Seattle)

Shellfish Harvesting and the Available Food Supply.

The effects of predation by human groups upon prey species affect a subsistence system and thus, its archaeological remains. Virtually all human activity, including predation, disturbs natural com-

munities and that disturbance alters the available food source for human populations. On San Juan Island on the northwest coast of North America, human populations have preyed upon shellfish within the intertidal zone for well over 600 years. In shellfish, the limits imposed by human predation include a shortened lifetime and thereby a smaller size range within each taxon. Shells from the midden on Garrison Bay are used to test the hypothesis that human patterns of shellfish collecting limited the size distribution of cockles and clams, and that these limitations are evident archaeologically. (12)

Ford, R. I. (53)

Ford, R. I. (19)

Foster, M. S. (see Brooks, R. H.) (28)

Fowler, D. D. (29)

Fowler, Don D. (Nevada, Reno)

The Conservation Ethic in American Archaeology: An Historical Overview.

Efforts to conserve archaeological resources in North America began in the late 18th Century, but crystallization of a conservation ethic did not begin until after the Civil War. The development of the ethic must be seen in the context of the natural resources conservation movement, and the historic preservation movement in the U.S. In this context, a history of the ethic's vicissitudes from ca. 1874 to 1974 is presented. (14)

Fowler, Melvin L. (Wisconsin, Milwaukee), William I. Woods (Southern Illinois, Edwardsville) and Christy L. Wells (Southern Illinois, Edwardsville)

A Formative Period Water Control System at the Amalucan Site, Puebla, Mexico.

The Amalucan site is situated in the Puebla Valley of the Central Mexican Highlands. The majority of the ca. 300 hectare site area is capped by a humus horizon which is buried under colluvial and aeolian sediments. Aerial photographic analysis, ground reconnaissance, and a series of excavations beginning in 1962 have revealed the existence of an extensive water control system dating to the Formative Period. A model for this system includes two impoundments connected by large parallel canals with a series of smaller lateral canals in between. Both irrigation and drainage functions for the system are proposed. Supportive evidence for the model is examined. (28)

Fowler, Peter J. (Royal Commission on Historical Monuments, England)
Survey in Britain.

Field survey in Britain is conducted within an antiquarian topographical tradition, now best expressed through analytical methods and sophisticated instrumentation on a project basis. Organizationally, the range is through institutional variety to individual enterprise with little coordination or standardization. Categories of site, regional and small areas are favored subjects; finance, land-management needs and landscape change often dictate the choice. The field evidence of early farming provides both a case-study and material important in later prehistoric Europe. It contributes a crucial element to understanding the evolution of Britain's cultural landscape and allows us to address basic questions in agrarian history. (15)

Frederickson, David (Sonoma)

Regional Conference Results From California.

This paper will consider the status of the California regional data base; standards and guidelines for the conduct of cultural resource management in a regional context; and interaction of regional planning with state and federal regulations and the State Plan process. (25)

Freter, A. (see Webster, D. L.)(32)

Freter, AnnCorinne and David L. Webster (Penn State)

The Regional Differences in Late Classic Rural Settlements within the Copan Area: The Sesesmil Versus Rio Amarillo.

Variations in the settlement patterns, artifact assemblages, population densities and agricultural potentials are examined for the Late Classic Maya rural settlements within the Copan region of western Honduras, from the Sesesmil drainage system to the Rio Amarillo river basin. The implications of these differences on the regional sociopolitical organization of the Late Classic Copan area is discussed, and a model of the regional sociopolitical organization of the Late Classic Copan Maya is proposed. (1)

Frisson, G. C.(4)

Frisson, G. C. (see Andrews, R. L.)(32)

Frisson, G. C. (see Kornfeld, M.)(46)

Fry, Robert E. (Purdue)

Disjunctive Growth in the Maya Lowlands.

Studies in the Mexican Highlands show that shifts in settlement distribution, density, and settlement system structure are often the result of shifts in regional political and/or economic centralization. Such studies have demonstrated the importance of adequate reconstruction of the structure of regional political and economic systems to any attempt at understanding regional demography. This paper will examine the usefulness of this approach in understanding the demography of the central and southern Maya Lowlands. Data from the Tikal region and areas of intensive agriculture will be used in this evaluation. (39)

Fryman, F. (see Doyle, D. E.) (18)

Gaines, Sylvia W. (Arizona State)

Are PCs the Answer? A Look at Some Problems and Issues.

The availability of microprocessors and the extension of these into many traditional tasks are having a far reaching effect in American archaeology today. The seemingly unending array of personal computers and software packages have placed computing resources in reach of virtually every archaeologist. This powerful technology brings attendant problems and issues which must be carefully considered. Among the more critical questions to be addressed are: (1) personal computer mainframe interfaces and software protocols, (2) security issues, both physical equipment and data, and (3) legal issues in the use of software and databases. Some projections for personal computer future use in an archaeological environment are offered. (41)

Galloway, Patricia K. (Mississippi Department of Archives and History) and Jerome A. Voss (Southern Mississippi)

Change in Choctaw Productive Organization During the Eighteenth Century.

The complexity of the interaction between Choctaw and European societies during the 18th century had a substantial impact upon the modes and organization of traditional Choctaw production. In addition to being increasingly linked to the Europeans through trade, the Choctaw were drawn into the political struggle between the French and British. This involvement not only affected Choctaw material culture, but also transformed the traditional subsistence system and the social framework surrounding production. This paper reviews both the documentary evidence concerning change in productive organization and the archaeological evidence from 18th century Choctaw sites in Mississippi. (49)

Gamble, S. (see Bailey, G. N.) (4)

Gardner, William M. (Catholic)

Federal Funding and Middle Atlantic Archaeology.

Federal funding over the past decade in the Middle Atlantic has advanced prehistoric and historic archaeology. The current situation bears little resemblance to the pre 1970s. It is true there has been both "good" and "bad" archaeology. At a minimum the sewer lines, the highway, and survey and planning funds have forced the area's archaeologists out of the major river stockaded villages and the tidewater plantations into the streams, mountains, and back roads, and below the plow zone. They have demonstrated that there is indeed anthropology lurking behind the otherwise dull attributes of cord marking, side notching, and salt glazing. This paper discusses these developments, how other factors such as new research orientations inter-relate, and considers some of the less than positive aspects. (18)

Garratt, M. (see Martin, D.) (6)

Garza-Valdes, Leoncio A. (Texas, San Antonio) and Gary Rex Walters (Missouri, Columbia)
Chromium Chalcedony: The Mesoamerican Emerald.

Chromium chalcedony described first in Rhodesia in 1965 as Mtorolite, was used in Mesoamerica since the Preclassic. It has been reported at the Middle Motagua Valley and the workshops at San Agustin Acasaguastlan and Kaminaljuyu. It has physical properties similar to emerald. At recent excavations in the San Agustin Acasaguastlan archaeological zone (Guaytan), worked chromium chalcedony was found, with signs of advanced lapidary technology (type IV workshop). The emerald color is given by chromium, and it has fuchsinite and cassiterite inclusions. Due to its characteristics we postulate that this mineral is the Quetzalitzli (Mesoamerican Emerald) described by Sahagun. (28)

Gasser, Robert E. (Museum of Northern Arizona)**Trash Pits and Floor Features; Don't Believe Everything.**

A deep Hohokam trash mound is sampled in 10cm levels in four adjoining areas to test for comparability between levels. The analysis produces conflicting results which suggest that a single column sample from a trash feature will not be representative of deposition. At another Hohokam site, the macrobotanical contents of pithouse floor features are compared to corresponding fill samples. The results show a tremendous amount of overlap, indicating that trash has masked the original functions of the floor features. This critical examination points out the need for more caution in drawing conclusions about deposition and feature functions. (19)

Geddes, David S., Michel Barbaza and Jean Vaquer (Centre d'Anthropologie des Societes Rurales, France)**Upper Paleolithic and Epipaleolithic in Languedoc and East Pyrenees: Continuity and Change.**

Closely following classic Upper Paleolithic sequences of the Aquitaine region of France, western Languedoc and the eastern Pyrenees show typical Magdalenian industries through the Dryas II in the Mediterranean geographic zone. The persistence, unchanged, of Magdalenian industries for another millennium or more during a phase of rapid, postglacial environmental modifications, shows the independence between technological change on the one hand, and subsistence and environmental change on the other. The subsistence economy shows the gradual replacement of cold climate by temperate climate species, fishing activities, and the first evidence of intensive exploitation of wild legumes and fruits. (52)

Geib, Phil R. and Martha M. Callahan (Museum of Northern Arizona)**Ceramic Exchange in the Kayenta Anasazi Region.**

Microscopic examination of several thousand white ware sherds from surface collections of nearly 300 sites reveals that volcanic ash temper occurs in upwards of 75% of the sherds within certain localities of the Kayenta region from Pueblo II to late Pueblo III. Using distributional data, oxidation experiments and geologic sourcing of both clays and ash, prehistoric production zones of ash tempered white ware are isolated. The occurrence of this pottery on Kayenta sites outside of the production zones is then interpreted as resulting from intraregional trade. Some additional implications of these findings are explored. (11)

Gelburd, D. E. (33)**Gelburd, Diane E. (Soil Conservation Service)****Interdisciplinary Research in Archaeology.**

The Soil Conservation Service (SCS) is encouraging interdisciplinary research in archaeology through the involvement of SCS staff and other specialists. SCS is assisting in the retrieval of environmental data for use in archaeological interpretations and environmental studies. This presentation highlights three research projects: archaeological and geomorphological studies in Iowa; geomorphological, paleo-botanical, and archaeological studies at Pilcher Creek Watershed in Oregon; and pedological, geological, and archaeological research in Arkansas. (46)

Gero, Joan M. (South Carolina)**Gems and Labor: Displaying Prestige in Stone.**

Lithic items have a long history of use as prestige markers. This paper, focusing on the prehistoric Andean region, documents a shift in the nature of value in prestige lithics. In earlier contexts, value can be seen to be derived from the scarcity of particular minerals and from displaying control over trade for such items. In later contexts, value is based on the labor intensity of items produced in stone, displaying control over the productive energy of skilled craftspersons. The implications of this shift in value are explored by examining the contexts from which prestige lithic objects are recovered. (49)

Gerstle, Andea I. (UCSB)**Ethnic Diversity in Late Classic Copan, Honduras.**

Excavations in an elite residential section of the Maya site of Copan resulted in the exposure of one or more plazas which may have been occupied by non-Maya people from the nearby Uluu or Comayagua River valleys. The hypothesis is tested by examining variation in several data categories such as the spatial arrangement of structures, architectural features, burial styles and offerings, and certain types of artifacts and their distributions. Suggestions regarding their possible social and economic role are presented, with special consideration given to the possible importance of the ethnic distinction. (1)

Gibson, E. C. (see Pye, M. E.) (54)**Gibson, Eric C. (Harvard)****Results and Interpretations of the 1983 Excavations at Kichpanha, Belize.**

Archaeological research, conducted intermittently at Kichpanha, Belize, since 1973 was primarily limited to surveying and mapping. During the 1983 season, test excavations in housemounds and plazuela groups yielded further evidence of extensive use of the site from the early Mamom phase until the Early Postclassic. The 1983 field results are presented in the context of previous research foci (such as relationships with the lithic production site of Colha to the south, trade, etc.). Results emphasized here are an early Mamom floor plan, the Chicanel phase expansion and Tepeu occupation. (54)

Gillispie, Thomas E. (Alaska, Fairbanks) and John F. Noss (Harvard)**Optimal Foraging in Diachronic Perspective: A Case Study from Interior Alaska.**

Application of optimal foraging models is becoming increasingly popular in archaeology. Selection of optimality models that are insensitive to slight environmental changes is critical in archaeological applications. Intensive wildlife, botanical, archaeological, ethnographic, fisheries, and paleoenvironmental studies have been conducted in the Upper Susitna Basin during the past five years. These data permit evaluation of the relative sensitivity of cost estimation procedures and optimal foraging models over a 7,500 year time span in a well-suited undisturbed environment. (37)

Gilman, Antonio (CSU, Northridge)**Prehistoric Archaeological Survey in Southeast Spain.**

Programs of systematic archaeological survey have scarcely been undertaken in Iberia, partly due to the conservatism of local archaeological practice, partly due to the difficulty of adequately dating later prehistoric materials from surface collections, and partly due to the difficulty of assessing the impact of long term soil erosion and recent agricultural modernization on site preservation. The strong contrasts in location of known sites between various periods suggests that significant changes in settlement pattern occurred associated with progressive agricultural intensification. Recent results of preliminary survey in the Vera Basin illustrate the difficulties and potential of systematically designed survey. (15)

Gilman, P. A. (24)**Glass, Margaret F. (Calgary)****Refuse Disposal and Bone Accumulations in Hohokam Villages.**

The distribution of faunal remains across different types of features offers information on the processes which structure bone accumulations at village sites. Feature assemblages from two Sedentary Period Hohokam villages in southern Arizona are analyzed to identify disposal patterns and taphonomic agents likely to be responsible for the information. Finally, methodological problems encountered in quantifying and comparing different taxa are addressed. (7)

Glassow, Michael A. (UCSB)**Changes in Subsistence on Marine Resources through 7000 years of Prehistory on Santa Cruz Island, California.**

Faunal remains from radiocarbon dated column samples collected from Santa Cruz Island have been analyzed to reveal broad changes in marine resource exploitation. The data indicate that shellfish were an important dietary constituent through 7000 years of prehistory, although other food resources undoubtedly always contributed more to the total annual diet. Sea mammals and fish become increasingly important after ca. 3000 B.P. These changes in marine resource exploitation are argued to be related to population growth, with environmental change being a significant contributing factor. (59)

Gleichman, P. J. (see Gleichman, P. J.) (3)**Gleichman, Peter J. and Carol Legard Gleichman (Boulder, Colorado)****Nature of the Pueblo II Occupation on Central Black Mesa, Arizona.**

Excavation of 27 Kayenta Anasazi sites on central Black Mesa, northeastern Arizona, indicate occupation of the area from Basketmaker II to late Pueblo III. The Pueblo III period is a little known period of occupation on Black Mesa and a time at which most of northern Black Mesa had been abandoned. These late sites are small habitations containing rectangular semi-subterranean structures. Based on size and material culture, these sites are interpreted as farmsteads occupied by nuclear families. This contrasts with the prevailing view of Tsegi Phase sites as large masonry habitations with multiple family occupations. (3)

Goldborer, S. Eileen (Oklahoma)**The Relationship of Reliance on and Intensity of Agriculture to the Presence of Pottery.**

A review of evidence from the archaeological record supports a relationship between the simultaneous presence of agriculture and pottery. To examine the relationship which exists between these two elements, two areas of data are examined: (1) a cross-cultural sample is used to determine correlations between pottery usage and reliance on and intensity of agriculture; (2) agricultural groups which do not use pottery are examined as exceptional cases. The conclusions drawn from these areas of evidence are presented. (11)

Gonzalez, J. (see Limon, A.) (19)

Goodyear, Albert C. (South Carolina)**Lithic Production for the Future: Quarry Behavior among Early Holocene Hunters-Gatherers in South Carolina.**

The study of chert quarries utilized by highly mobile prehistoric hunter-gatherers is relevant to the understanding of production which is future oriented. Where critical lithic raw materials have restricted geographic distributions, the study of core and tool production at the raw material source can be informative about decisions which had to be anticipated at locations quite removed in time and space. Core and preform designs from a PaleoIndian quarry in South Carolina are analyzed to provide a baseline to explain assemblage variability away from the source. (49)

Gorenflo, Larry (UCSB)**Geographical Information Systems and Regional Analysis in Archaeology.**

Over the past 15 years, locational analysis has become established as a key area of archaeological inquiry. With greater emphasis on quantitative regional research, the need for efficiently organized, computerized data bases grows increasingly important. This paper addresses such issues within the context of regional research in the Basin of Mexico. Ultimately stressing applications, it begins by exploring the need for such data structures. Then the design of a regional-ecological GIS for settlement data is examined with the potential for interfacing with other GIS's. Examples of spatial studies of the basin strongly support the need for such data organization. (6)

Govaars, M. (see Brown, K. L.) (30)

Grabert, Garland (Western Washington)**Regional Conference Results From the Northwest.**

This paper will consider the status of the Northwest Regional data base; standards and guidelines for the conduct of cultural resource management in a regional context; and interaction of regional planning with state and federal regulations and the State Plan process. (25)

Gradwohl, David M. and Nancy M. Osborn (Iowa State)**In Pursuit of the Coal Miner's Daughter: Interpretation of Excavated Features at the Buxton, Iowa, Townsite.**

Buxton, Iowa, was a town owned by the Consolidation Coal Company between 1900 and 1925. Blacks predominated among Buxton's 5000-6000 residents. Today, few vestiges of the well-planned community remain at the abandoned townsite. Archaeological excavations, following reconnaissance survey, revealed remains of subsurface features in a former house lot. A linkage of these structures and associated domestic debris with a specific family is suggested on the basis of archival and archaeological methods. The evidence points to a coal miner's family whose daughter's birthdate and address were published in the *Bystander*, a black newspaper published in Des Moines. (30)

Graham, Elizabeth (Royal Ontario Museum)**An Overview of Postclassic to Historic Period Settlement at Negroman-Tipu.**

The excavations conducted at the site of Negroman-Tipu, on the Eastern Branch of the Belize River, have furnished evidence of intensive settlement from Late Postclassic to Historic times. Recent work suggests that occupation in the area of the historic community can be traced back—though with shifts in building locales—to the Middle Postclassic period. A synthesis of the data on the artifact inventory and construction techniques will be presented in an effort to broaden our view of settlement continuity and change in the upper Belize Valley. (21)

Granger, Joseph E. (Louisville)**Intrusive "Types" or Shared Lithic Reduction Sequence: Functional Variation at the Archaic-Woodland Interface in the Lower Great Lakes.**

Studies in the last several years have revealed a complete in-situ reduction sequence for the production of lithic tools during the Terminal Archaic of central and western New York. This sequence

has been found to have significant correlations with similar temporal developments in southwestern Ontario and Michigan's Saginaw Bay Area. Recent analysis of hitherto unavailable Late Archaic-Early Woodland lithic collections from central New York has suggested that historical-descriptive types of lithic end products such as projectile points until now considered to represent intrusive cultural groups or elements may have simply resulted from critical functional choices made at differing nodes in the indigenous shared lower Great Lakes lithic reduction sequence, over this period. (8)

Graves, Michael W. (Guam)**The Tempo and Nature of Evolutionary Change in Contrastive Environments.**

The pattern of prehistoric cultural evolution should be explicable in terms of selection for varying natural and cultural environments. It is hypothesized that variation in critical climatic attributes is associated with distinctive long term evolutionary patterns. The greater the climatic variation, the more likely it will be that opportunistic behavioral and organizational changes will be selected for over the short term and instituted as the dominant arrangement. Stable environments, on the other hand, condition less rapid or complete selection and will tend to preserve more variation in behavioral adaptations. This hypothesis is tested on two sets of archaeological data from the American Southwest and the Western Pacific, where similar evolutionary trajectories prevailed. (17)

Grayson, Donald K. (Washington, Seattle)**The European Influence on American Archaeology: The Search for Our Earliest Ancestors.**

The 1859 recognition of a Pleistocene archaeological record immediately led to reports of Tertiary artifacts in the Old World and to a competitive search for comparable materials in the New World. These searches spurred the growth of prehistoric archaeology, but had largely ended by the 1930's because of difficulties in securely identifying noncomplex subtractive artifacts. After World War II, the search began again in North America, but, because of the nature of the archaeological record, was not revived in the Old World. Current debates over the results of the North American work are tellingly parallel to the European debates of 1865-1925. (14)

Grebing, Paul (Rochester Institute of Technology)**In a Button: Material Reflections of Early American Culture.**

Stylistic analysis of buttons on 18th and 19th century men's waistcoats and vests seems to confirm two insights developed by Deetz. First, enlightenment reason and order are reflected in design and symmetrical arrangement. The canons of style can be traced through tailors' models to France. Second, the individual as a distinctive type in the emerging Republic may be reflected in increased variability in button styles and their increasingly asymmetrical arrangement on vests. Suggestions are offered for grounding these inferences about ideology in the economic and social contexts in which buttons and vests were manufactured and used. (40)

Green, E. (32)

Green, Margerie and Richard W. Effland (Archaeological Consulting Services Ltd.)**Making Contracts Count.**

Contract archaeology is viewed from three perspectives: (1) project specific research potentials, (2) cumulative research opportunities, and (3) academic research interfaces. Results derived from diverse projects provide examples of how contract archaeology can contribute to our understanding of the past. Examples illustrate some of the unique and innovative contributions that are possible despite the constraints of contracts. Contract results may foster insights into regional problems not often addressed by academic research, given present levels of funding and research interests. Finally, examples are provided to illustrate how data generated by contract archaeology projects can be interfaced with academic research objectives. (58)

Green, Paul R. (East Carolina)**Forager-Farmer Transitions in Coastal Prehistory: Examples from the Old and New Worlds.**

Archaeologists in Europe and North America hypothesize that understanding resource-rich coastal societies in prehistory is relevant to the problem of origins and spread of agriculture. Recent work on Cardial Ware groups in Mediterranean and Atlantic Europe and on Mockley and Colington Phase groups in Atlantic North America suggests the causal relationships are varied, and often contradictory on the surface. Well-adapted coastal foragers and fishers resisted, sometimes for long periods, the advent of intensive grain agriculture. Certain artifact types and more "pliable" forms of plant domestication were more readily accepted. (56)

Green, Stanton W. (South Carolina), James Moore (CUNY, Queens) and Marek Zvelebil (Sheffield)
Multi-Stage Survey for Mesolithic and Neolithic Sites in Southeastern Ireland.

The colonization and spread of farming have long been a subject of debate among Irish prehistorians; one factor is the near complete absence of Mesolithic and Neolithic finds from the southern portion of the island. The Bally Lough archaeological project is designed to systematically survey the Waterford estuary area of southeastern Ireland in order to examine this void in the archaeological record. Toward this end we have begun implementing a multistage research design that includes non-random and random regional survey strategies, as well as intensive intra-site geophysical survey. To date we have located over 125 sites ranging in age from the Mesolithic through the Bronze Age. This paper describes our ongoing survey design and discusses its effectiveness in terms of site discovery and solving problems concerning Ireland's initial colonization and the subsequent spread of farming. (15)

Green, T. (25)

Gregory, David A. (Arizona)
Quantification and Implications of the Labor and Resource Requirements for the Construction of Hohokam Platform Mounds.

Recent excavations at Las Colinas, a large Sedentary and Classic period Hohokam village in Phoenix, Arizona, have provided detailed documentation of the complex construction sequence of Mound 8, a platform mound. Based on these excavations, estimates of the labor and materials required for the construction of Mound 8 are presented. These estimates are then applied to other excavated platform mounds as well as those for which only outside dimensions are available. Comparisons are also made with the labor requirements for ball courts and canals. The implications of these estimates for an understanding of Hohokam sociopolitical organization are explored. (43)

Griffin, Dennis (Oregon State)
Prehistoric Utilization of Thermal Springs in the Pacific Northwest.

The use and importance of thermal springs to native Americans prior to and during the period of white contact is examined. Ethnographic, archaeological and oral historical information is collected in an attempt to reconstruct the past use of these springs. This information is examined in relation to the springs location and temperature in an effort to see what effect hot springs might have had on the settlement patterns throughout the three culture areas that constitute the Pacific Northwest (Northwest Coast, Plateau and Northern Great Basin). An analysis of these data is used to form a temporary assessment of the value of thermal spring sites to our archaeological inventory. (40)

Griffin, J. B. (13)

Griffin, P. Bion (Hawaii)
Campsites and Home Bases: Behavioral Correlates and Archaeological Systems Among Humid Tropics Foragers.

Ethnoarchaeological research among groups of foragers in the Philippines provides indications of the range of variation in adaptive strategies in various tropical environments as well as a base for generalizations concerning tropical forest hunters through space and time. One central issue concerns the ability of the forests to support human populations prior to horticulture. Another focuses on the relative importance of meat versus plant foods. The behavioral correlates of the ethnographic material universe help delimitation of archaeologically predictable data, which in turn enable construction of an improved theory of artifact-human behavior relationships. (47)

Grosboll, Sue (Wisconsin, Madison)
Domestic Architecture as an Artifact in the Huanuco Region of Peru.

Prehistoric Andean architecture holds great promise as a data source for such archaeological topics as social structure, demographics, and spatial analysis. Through the comparison of architectural remains and early colonial documents which refer specifically to those remains, a greater understanding can be reached of architecture as an artifact and of the Andean village and household as a working cultural entity in the prehistoric periods. This paper will discuss the use of colonial documents and field survey of architecture in the Huanuco region of Peru, and the resulting picture of the Late Horizon household, population, use of space, and village in the region. (48)

Gross, G. T. (see Wolf, P.) (44)

Gruber, Jacob W. (Temple)
Culture and Archaeology: An Historical Retrospect.

Since the founding of the SAA, American archaeology has undergone a revolution equal to that from which prehistoric archaeology emerged a century earlier. In the former, the artifact—sole witness

to an earlier human presence—learned to speak of time and its passage; in the latter, of the richer vocabulary of culture. Such a merging of cultural anthropology and prehistoric archaeology required the development of both a sophisticated concept of culture and an archaeological strategy competent to recover its systemic nature from the fragmentary record which the artifact provides. That development is a significant part of the history of both archaeology and anthropology during the past half century. (14)

Gruhn, Ruth (Alberta)

Association of Artifacts with Extinct Fauna in Two Caverns in Interior Bahia, Brazil.

In Toca dos Buzios, a limestone cave near central Bahia, modified bone fragments plus exotic quartz fragments with evidence of use-flaking were found in a yellow silt deposit sealed under a flowstone floor. Bones of horse, a giant peccary, and a giant cervid were associated. In Toca de Manoel Latao, about 10km away, flaked stone artifacts plus a few simple bone artifacts were found in silt deposits in association with bone of giant armadillo (*Pampatherium*), horse, and camelid. A late Pleistocene age is indicated. (31)

Guidon, N. (46)

Guidon, Niède (Ecole des Hautes Etudes en Sciences Sociales, Paris)
Early Man in Piauí, Brazil.

Man inhabited the area of Sao Raimundo Nonato, southeast of Piauí, Brazil, at least since 30,000 years ago. Since 1978 we have led five seasons of excavation at the site of Toca do Boqueirão do Sitio da Pedra Furada. The latest occupation levels date from 6160 ± 130 years B.P. and the shelter was inhabited over a long time period. We have dates for several levels, with the earliest so far Level XIX at 27,000 and 31,500 years B.P. (Level XIX). Excavations in 1984 proceeded to Level XXV and in all levels we found lithic material and charcoal. The implements of the oldest levels were typically flaked on pebbles. We collected, in the deepest levels, a very important assemblage of lithic material ever associated with charcoal. In this paper we also discuss the evidence of rock art found in association with firehearths. This site is very important for the study of early man in South America as it is the oldest actually known in this region. (31)

Gunn, Joel (Texas, San Antonio)

Modeling of Short Interval Culture and Climatic Change Time Series.

Recent publications provide short interval culture chronologies, phases of a few hundred years. Culture change, being a product of both cultural and environmental processes, requires reconstruction of environment at equally brief intervals. The cost of purely empirical reconstruction of high resolution enviro-cultural chronologies is prohibitive. An economical strategy is to model the environmental sequence and empirically test it at critical junctures. A model of southcentral area climate change constructed from global climate-forcing variables correlates favorably with the Pleistocene-Holocene culture sequence. (2)

Guthrie, Mark R., Thomas Pozorski and Sheila Pozorski (Denver)
An Adaptive Strategy Model for the Late Prehistoric Period in Southeastern Colorado.

A prehistoric collector adaptive strategy for subsistence and settlement following Binford's logistical collector model is discussed for the Fort Carson-Pinon Canyon Maneuver Area. The model proposes the existence of: (1) substantial semi-sedentary residential bases within the canyons, (2) medium field camps located in the steppes and hills; and (3) small outgrowths of both major site types geared toward specialized activities. It is argued that residential bases within the canyons were winter occupations, but potentially habitable all year, whereas field camps and locations reflect seasonal procurement during the summer and fall. Critical to the logistic model is the recognition of sites which document premeditated exploration of a major reliable resource. (45)

Haag, William G. (Louisiana State)

Field Methods in Archaeology.

A history of the last 50 years of American archaeological technique is presented showing our original dependence upon European sources both classical and prehistoric. It is shown that archaeologists were already firmly committed to stratigraphy in developing chronologies. It is argued that the greatest single revolutionary event was Federal Relief programs in the 1930s, which enabled large scale testing of new excavation techniques. The introduction of newer concepts has demanded the development of newer techniques. Radio-carbon dating is only as good as our method of collecting specimens. (14)

Haberman, Thomas W. (Archaeological Research Center, Ft. Meade)

Frequency of Corn: Towards Assessing the Relative Importance of Horticulture.

A measure of the frequency of corn, expressed as milliliters of carbonized corn fragments per liter of fine-screened soil sample, may be of value in assessing the relative importance of horticulture in the subsistence economies of corn producing cultural complexes. Due to numerous cultural variables, results must be interpreted cautiously and might best be used in conjunction with other analytic methods. Data from sites in South Dakota are used to illustrate preliminary results of this approach which indicates an increasing reliance on horticulture from the Plains Woodland to Plains Village traditions. (19)

Hackenburger, S. (see Bailey, R.) (6)

Hagstrum, Melissa Billings (UCLA)

Stability in Village-Level Specialization in the Upper Mantaro Valley, Peru: The Organization and Technology of Production.

Ethnographic observations of pottery manufacture at the local villages of Aco, Concho, Quiche, and San Luis provide models for prehistoric production. Cost efficiency in specialist production and consistency in demand are thought to account for stability in the organization of production. Here, demand is measured by consumption of ceramic products; cost efficiency is measured by the standardization and labor investment in manufacture. Analysis of prehistoric Wanka ceramics indicates little change in standardization and cost efficiency from Wanka II and Wanka III, or in fact from prehistoric to historic times. (10)

Hahn, J. (4)

Halbirt, Carl D., and Richard S. Ciolek-Torrello (Museum of Northern Arizona)

Changing Interactions in the Northern Mogollon Region Prior to A.D. 1000.

The degree of interaction between the early Mogollon and adjacent culture areas has been debated voluminously and in many instances has resulted in the Mogollon being questioned as a distinct cultural entity. New evidence from two pit house villages located on the White Mountain Apache Indian Reservation makes possible the examination of interaction issues within a microtemporal framework. Intrusive ceramics and other data from dated contexts are combined with regional data to document the changing interaction between the Mogollon, Hohokam, and Anasazi in the Northern Mogollon region. (3)

Hall, Barbara A. (Arizona)

Household Economy and Refuse at Matcacapan, Veracruz, Mexico.

Teotihuacan in the Middle Classic exerted a strong economic influence on Matcacapan. A dominant outside economic power will have an effect on the distribution of domestic labor and resources. Variations in the distribution of domestic refuse in specified contexts are used to define household economic patterns. Important artifact variables include types and their distribution, density, diversity, and attributes resulting from use and discard. Ethnographic and ethnoarchaeological studies show that household economic patterns are an important influence on household size and structure, which can be seen in domestic architecture. (40)

Hally, David J. (Georgia)

Identifying Vessel Function: What the Archaeological Evidence Doesn't Tell Us.

The pottery vessel assemblage of the 16th century Barnett phase in northwestern Georgia contains between 13 and 17 morphologically and physically distinct vessel types. Hypotheses about the way these vessel types were used are formulated from a variety of evidence, including mechanical performance characteristics, use alteration and archaeological context. Historically documented aboriginal food habits in the southeastern United States reveal a number of important aspects of vessel usage that are not detectable from the archaeological evidence alone. (27)

Hamilton, N. D. (see Petersen, J. B.) (33)

Hamilton, N. D. (see Thayer, C. A.) (33)

Hammond, N. (see Donaghey, S.) (39)

Hammond, Norman (Rutgers) and Anne Pyburn (Arizona)

Country Cousins: Demographic and Dynamic Aspects of Settlement at Nohmul, Belize.

The Formative through Postclassic site of Nohmul is one of the largest in northern Belize, but small and simple in structure compared with the major sites of the Peten-Campeche "core" area of the central Maya lowlands. Mapping work at Nohmul since 1973 has resulted in a detailed picture of a widespread settlement, for which some chronological calibration has been obtained. The relationship

of settlement to topography and resources, and its internal structure and possible social correlates, are discussed in the light of the most recent field work. (39)

Hantman, Jeffrey L. (Virginia)

Boundary Dynamics Among Prehistoric Hunter-Gatherers in the Eastern United States.

The study of hunter-gatherer regional social organization has become profitably concerned with variation in territoriality and the spatial scale over which interaction occurs at different organizational levels (e.g., task group to information sharing networks). Parallel research on stylistic behavior has yielded new insights related to processes of boundary formation and the concept of boundedness. The potential of these lines of research to reveal new information on prehistoric hunter-gatherer adaptation has been demonstrated in several areas of the world. This paper presents the initial results of research on temporal variation in hunter-gatherer spatial adaptations and stylistic behavior in the eastern United States. (23)

Hardesty, Donald L. (Nevada, Reno)

Evolutionary Thinking in Historical Archaeology: Suggestions from the Industrial Frontier.

Evolutionary and population concepts are used in a variety of ways by historical archaeologists. For the most part, however, they are neglected. The theoretical structures of formal evolutionary theory can provide an explanatory and methodological framework needed to fill the present interpretive wasteland in historic sites archaeology. An example of the usefulness of such an approach is given from the 19th century mining frontier in central Nevada. Here, distinctive patterns of population movement and cultural change can be understood within the context of evolutionary ecology. (17)

Hargrave, Michael L. (Southern Illinois, Carbondale)

Settlement Plan Standardization and Community Integration: The Black Mesa Anasazi.

Settlement plan standardization is a pattern in which different communities share very similar arrangements of architectural facilities and other spatial divisions. This paper examines how and why standardized plans develop and are maintained. Examples are drawn from the Kayenta Anasazi sequence of Black Mesa, Arizona. This sequence exemplifies a regional trend involving the appearance of small settlements with standardized arrangements of facilities related to basic subsistence (food processing and storage), domiciliary, and community integrative activities. Aspects of this standardized settlement plan are explained in terms of efficiency in facility location, design, construction, and use. (24)

Harris, John W. K. (Wisconsin, Milwaukee)

Burning Issues: Archaeological Studies of the Lower Pleistocene in East Africa.

The formulation of multiple working hypotheses to guide archaeological research toward a better understanding of the adaptive patterns of behavior of early hominids has generated some heat. Various hypotheses will be examined and discussed in relation to well studied archaeological localities associated with the Great Rift Valley of eastern Africa. By taking a regional perspective there appear to be emerging localized patterns of land use and subsistence activities by early tool using hominids that cannot be accounted for by any other model. (4)

Harrison, Peter D. (Tulane)

A Hop, A Skip, and A Jump: Regularity of Maya Intersite Spacing.

Site reconnaissance in southern Quintana Roo, Mexico, led to recognition of repetition of certain distances between population centers. Examined here are factors governing the subjective importance assigned to sites and their correlation with regularity of spacing, factors which may mislead in judging distance or in perceiving patterns of regularity, roles of lacunae in the data, and the size of the zone examined to date. Explanations are speculative at this point. (39)

Harrold, Francis B. and Raymond A. Eve (Texas, Arlington)

Pseudoarchaeology: Who Believes In It, and Why?

A questionnaire administered to students at a large urban southwestern university explored the strength of student belief, disbelief, and skepticism for a number of pseudoarchaeological and creationist claims. These variables were analyzed relative to the students' educational backgrounds and social, intellectual, and religious characteristics. Results show some regional peculiarities and, more importantly, that factors unrelated to education or the intellectual merits of pseudoscientific beliefs strongly affect their acceptance. Furthermore, these conditioning factors vary for different beliefs (e.g., creationism vs. "ancient astronauts"). Implications are discussed for archaeologists as educators of students and the general public. (2)

Hasenstab, Robert J. (Massachusetts, Amherst)

Agroecology and Geopolitics: An Analysis of Iroquoian Settlement Change Through GIS Techniques.

The evolution of Iroquoian culture coincided with the development of warfare, tribalization, and maize agriculture in the Northeast. These processes are reflected in settlement changes at a regional scale, through geographical correlates such as agricultural potential or proximity to trade routes. Though many such variables have been suggested as having influenced change, none have yet been tested rigorously against a body of settlement data. Here, proto-Iroquoian site distributions in New York are examined in a geographical context. GIS methods are used to test hypotheses regarding geopolitical and agroecological influences on settlement behavior during the Late Woodland Period. (6)

Hastorf, C. A. (see Moya, A.)(10)

Hastorf, Christine A. (Minnesota)

Archaeobotanical Remains: Interpretive Problems Concerning Production and Consumption.

Traditionally, prehistoric plant remains from archaeological sites have been used to determine the range of plant foodstuffs consumed by the inhabitants. Today, paleoethnobotanists are interested in using such plant remains to address economic and ecological questions. More systematic scrutiny of the data has shown that plant distributions better reflect actual production. Only in certain specific situations do botanical remains reflect actual plant consumption. Assumptions underlying interpretations of plant remains and their distribution will be discussed. (53)

Hatch, James and Dienje Kenyon (Penn State)

A Preliminary Social Status Taxonomy for the Copan Maya.

Nearly 300 human burials have been excavated in the rural and core areas of Copan. This paper will discuss the methods used to construct a social status taxonomy based on such mortuary characteristics as tomb construction, tomb location, and artifact accompaniments. The inferential linkage between this taxonomy and major organizing principles of the Copan Maya social structure will also be discussed. This classification is offered as a preliminary analytic framework for studies of demography, diet and pathologies now underway. (1)

Hathaway, J. Holly (Colorado State), Jeffery L. Eighmy (Colorado State), T. Kathleen Henderson (Arizona State) and Randall H. McGuire (SUNY, Binghamton)

Archaeomagnetic Paleopole Locations from South-Central Arizona: Additional Data for the A.D. 900-1100 Portion of the Southwest Master VGP Curve.

Results from at least 35 archaeomagnetic samples collected from sites AZ:T:12:37 (La Ciudad) and AZ:T:12:43 in Phoenix are presented. The paleopole locations of samples believed to date between A.D. 900-1100 suggest a shift in the location of this segment of the Southwest Master VGP Curve. A lower (more southerly) location is suggested. The independent dating, while tentative, was established by ceramic and radiocarbon methods. (40)

Haurly, E. W.(13)

Haviland, W. A.(1)

Hayden, Brian and Brian Chisholm (Simon Fraser)

The Role of Salmon in the Upper Paleolithic of Southwest France.

There are two competing constructions of the economy and population levels for the Upper Paleolithic around Les Eyzies; an economy of abundance vs. one of poverty. Because intensive use of salmon can provide subsistence abundance and stability, tests were carried out to determine the importance of seafoods in the Upper Paleolithic using carbon isotope ratios in human, animal, and salmon bones. In other areas of the world such as the Northwest Coast, highly sophisticated art traditions are associated with economies of abundance, and results of this research may indicate that the same was true of the European Upper Paleolithic. (4)

Hector, Susan M. (RECON) and Martin D. Rosen (California Department of Transportation)
Identification of Activity Areas by Flake Attribute Analysis.

Activity areas in any sites are difficult to identify because they may contain a limited array of artifacts and lack features. The results of two studies in southern California indicate that flake attribute analysis can be used to identify activity areas and classify the functions of sites. Expansion of the method permits identification of culture change and site affiliations. A series of attributes obtained simply from each flake are tabulated to compare and contrast sets of flakes from intra-site sampling areas. (8)

Hemphill, Claudia B. (Oregon)

Ecology, Ethnicity and Interaction in the Western Arctic.

Determining whether formal variation in artifact types indicates ethnicity, or the operation of local ecology, depends foremost on accurate identification of the "stylistic" and the "functional" aspects of assemblages. This task is usually complicated by the difficulty of objectively isolating the stylistic aspects in the limited remnants of simple societies. Behavioral interpretation of the causes for variability in material culture patterns is thereby jeopardized. Here, however, the diverse content and classificatory reliability of collections representing the Western Thule of Arctic Alaska provided an excellent opportunity to examine the interplay of ecology, ethnicity and regional interaction in forming material culture patterns. (23)

Henderson, Ruth W. (Tulane)

Jay Settlement-Subsistence Systems in the Gallegos Mesa Area, Northwestern New Mexico.

Recent archaeological investigations on Gallegos Mesa in northwestern New Mexico have resulted in the accumulation of a significant amount of data on the Archaic. This paper focuses on the Jay phase sites, some of which are quite different (larger with a more varied artifact assemblage) from those previously reported for this time period. Analysis of these sites provides insights into Jay phase subsistence systems. (38)

Henderson, T. K. (see Hathaway, J. H.)(40)

Henderson, T. Kathleen (Arizona State)

Dating the Hohokam: New Dates from La Ciudad.

The Hohokam chronology has been a source of continued debate among Southwestern scholars. Since the research at La Ciudad is heavily dependent on establishing contemporaneity among sets of features, the temporal issues underlying this debate must be addressed. An investment was made at La Ciudad to procure quality dates. These absolute dates provide the basis for calibrating the traditional typology and generating predictive dates using an attribute-based ceramic analysis. In this paper, the techniques and resulting dates for the Hohokam will be presented. Their implications concerning the controversy surrounding the Hohokam chronology will also be discussed. (3)

Hendon, Julia A. (Harvard)

The Use of Space and the Functional Interpretation of Structures.

Excavations in the Sepulturas area provide an opportunity to examine the function of structures dating from the Late Classic Maya occupation of Copan. The hypothesis that these structures, grouped in patios varying in size and complexity, represent a residential zone adjacent to the main center is tested by a consideration of several lines of evidence. These lines include architectural features such as room lay-out, size, and furniture as well as artifactual data from associated contexts. The identification of specific activities and the areas where such activities took place is critical to the support or refutation of the hypothesis. (1)

Henning, Dale (Luther)

Regional Conference Results from the Great Plains.

This paper will consider the status of the Great Plains Regional data base; standards and guidelines for the conduct of cultural resource management in a regional context; and interaction of regional planning with state and federal regulations and the State Plan process. (25)

Herrera, M. M. (see Baied, C.)(46)

Hesse, B. C.(42)

Hesse, Brian (Alabama, Birmingham) and Arlene Rosen (Israel Geological Survey)
Chronological Contamination in Stratified Archaeological Sites.

A problem affecting the analysis of materials recovered from Middle Eastern tells is the intrusion of artifacts from earlier contexts into later deposits. A step toward resolving this problem is the discovery of criteria capable of distinguishing primary *in situ* from secondarily deposited remains. Two methods related to bone remains are suggested. One assumes that redeposited material suffers additional exposure to taphonomic processes resulting in higher relative survival of resistant skeletal elements. The second argues that in undisturbed deposits percentages of sand-sized bone fragments are proportional to the amount of large bone, whereas in disturbed situations the relationship is unpatterned. (55)

Hester, Thomas R. (Texas, San Antonio)

Archaeological Investigations at Colha, Belize: The 1983, 1984, and 1985 Seasons.

This paper serves as an overview of the archaeological research at the lowland Maya lithic production center of Colha, Belize. Major excavations were again carried out in 1983 and 1985, with a testing

program conducted in 1984. A variety of structures, activity areas, and middens were excavated, ranging in age from the early Middle Preclassic through the Early Postclassic. These investigations allow a more complete picture of the changing Maya settlements at Colha during a 2200-year time span. Emphasis here is on the research designs for these investigations, as well as a review of major accomplishments. (54)

Hicks, Patricia A. (Desert Research Institute)

Dating the Undiagnostic Lithic Scatter Through the use of Patterned Changes in Debitage Attributes.

A brief history of Archaic lithic studies in the northern Southwest is presented. Results from several recent research endeavors directed toward the problem of dating the undiagnostic lithic scatter are reviewed and the utility of the methods assessed. The results of an on-going study directed toward the elucidation of patterned changes in debitage attributes from dated Archaic contexts is presented. The significance of several key attributes (e.g. heat treatment, artisan errors, etc.) for understanding the cultural system, and the dating of the undiagnostic lithic scatter are discussed. (38)

Hill, Robert M. II, (Texas, San Antonio)

Pottery Production and Change: Models from Ethnography and Ethnohistory.

Ethnographic information on the organization and dynamics of highland Maya pottery making may be used to guide archaeological research in the area. Models of pottery production and change are needed to go beyond culture history and examine cultural dynamics. Ethnographic models are generalizations that explain behavior related to an activity, and if applicable, a description of the past becomes possible. This leads to an assessment of continuity and change in the pottery of a society, and what that may indicate about cultural processes. Discussions of trade and exchange relationships cannot occur until the organization of goods production has been established. (27)

Hinsley, Curtis M. (Colgate)

Writing the History of American Archaeology.

Histories of archaeology are divisible into several overlapping types and approaches. Generally speaking, however, the history of archaeology has swung between the poles of memoir-biography and general history. With some exceptions, lacking thus far has been consideration of the social and institutional matrix of archaeology. For example, focus on individual motivation and achievement has blurred the extent to which patrons and institutions have influenced the direction of questioning and exploration. More generally, it is worth asking whether the traditional porousness of archaeology—the repeated difficulty of drawing clear lines between professional and amateur—has created a discipline that enjoys unusual public support but by the same token is vulnerable to esoteric influences. Boundary demarcation thus emerges as a central theme of the history of archaeology, reflected in memoir, biography, and general history alike. (14)

Hirth, Kenneth (Kentucky)

Epiclassic Militarism and Social Organization at Xochicalco, Morelos.

The role and importance of militarism in the organization of Epiclassic social systems is discussed within the context of available data from the site of Xochicalco, Morelos. A variety of data is considered including the epigraphy of the site's major monuments, site architecture and defensive fortifications, ritual evidence for human sacrifice, and regional settlement pattern data on site location and material culture patterns. It is concluded that Xochicalco grew primarily as a result of military conquest but also engaged in both state sponsored long distance trade and human sacrifice. (20)

Ho, Chuan-Kun (New Mexico)

Mobility Pattern Changes of Hunters-Gatherers During the Early and Late Paleolithic Periods in China.

More paleolithic sites have been found and reported during the late 1970s and early 1980s than previous decades in China. Most research strategies of paleolithic reports were focused more on descriptions of site contents than on explanations. By using lithic assemblages in general and faunal assemblages in particular of better reported sites from north and south China, this paper will discuss in preliminary nature the changes from logistic mobility of Early and Middle Paleolithic to residential mobility of Late Paleolithic periods within their paleoenvironmental context. (47)

Hoff, J. (see Stute, J.) (30)

Hoffman, C. Marshall (Arizona State)

Stylistic Variation in Lithic Tools: Constraints of Tool Manufacture, Maintenance, and Use.

Stylistic variation in assemblages of lithic tools operates within the technological constraints of tool manufacture and maintenance, as well as the functional constraints of tool use. These constraints structure the expression of stylistic variation in lithic assemblages by limiting the number and range

of alternative states attributes can take. Only by constructing models detailing the relationships between attributes that result from tool manufacture, maintenance, and use, can one provide criteria for the selection and ranking of variables sensitive to stylistic analyses of lithic assemblages. (16)

Hoffman, Charles A. (Northern Arizona) and John Winter (Molloy)

A Chronological Anchor for Palmetto Ware in the Bahamas.

While the widespread Palmetto Ware is an excellent marker for the prehistoric occupants of the Bahama Islands of the West Indies, its temporal placement is at best poorly understood. In 1492 Christopher Columbus traded glass beads, metal coins and buckles, and Spanish crockery to the Bahamian Indians. Results of excavations behind the beach where it is believed Columbus went ashore, including the finding of both Spanish artifacts and Palmetto Ware in association, are reported, providing for the first time a chronological anchor for this ubiquitous pottery. (40)

Hoffman, Ellen S., and Tristine Lee Smart (Michigan)

Archaeobotanical Remains and Environmental Reconstruction.

Archaeobotanical remains are considered an important source of information regarding the environmental context of an archaeological site. However, many factors can influence the reliability of plant remains as environmental indicators. Cultural factors such as specific uses or preferences for particular plants influence the archaeobotanical assemblage. Ecological factors including the specific microenvironment of the site area and the relative complexity of the plant communities in the region affect the reliability of plant remains as indicators of the regional environment. The use of wood charcoal and pollen for environmental reconstruction is considered in this context, with examples from temperate, semi-arid, and tropical environments. (53)

Hofman, Jack L. (Tennessee)

Hunter-Gatherer Mortuary Variability: The Impact of Mobility.

Most archaeological mortuary studies rely on a model using age, sex, and status as the essential explanatory elements. Investigations of hunter-gatherer mortuary behavior, however, need to consider the influence of mobility and variations in group organization when interpreting burial variability. Instances are documented among hunter-gatherers where mortuary practices are not explicable simply in terms of age, sex, and status. This study confronts the interpretation of hunter-gatherer burials using a model which emphasizes mobility rather than relying on models designed for sedentary groups, and relates patterning in hunter-gatherer mortuary activity to areas of general anthropological interest such as group organization. (36)

Hogan, Patrick (New Mexico)

Foragers to Farmers: The Adoption of Agriculture in the Northern Southwest.

Since the late 1960s, ethnographic studies of hunter-gatherers have led to a belated appreciation of this lifeway as a stable and successful long-term adaptation, in which mobility is a critical factor. Thus it seems unlikely that agriculture would be readily adopted by hunter-gatherers in the absence of some compelling factor. Given these considerations, the introduction of agriculture in the Southwest is perhaps best viewed as a response to the disruption of a previously successful hunting-and-gathering adaptation. This paper examines two factors that might have been responsible for that disruption—environmental change and population growth—using data on late Archaic and Basket-maker II settlement systems from the Four Corners region. (38)

Hohman, J. W. (see Wood, J. S.) (43)

Holt, H. B. (see Klesert, A. L.) (30)

Hosler, Dorothy (MIT/UCSB)

The Cultural Structuring of Technology: Copper Alloys in Ancient West Mexico.

Technological investigations of ancient West Mexican metallurgy indicate that two kinds of bronze-copper-tin and copper-arsenic were known. Tin and arsenic alloyed with copper hardens it. Many indigenous metallurgies have used these alloys for tools. The West Mexican peoples, however, used these two alloys for another property: for their color, which is golden in high tin bronze and silvery in high arsenic bronze. Objects fashioned from these alloys symbolically convey power and prestige through form and color; they include large ceremonial tweezers, neck ornaments and bells. Ideological concerns determined that color was the basic property around which this aspect of the metallurgy developed. The cultural selection of properties exemplifies the cultural structuring of technology at the most fundamental level. (16)

Houston, Margaret (North Carolina)

Paleoethnobotany and Inferences About Complex Society in Oaxaca, Mexico.

Methodology forms a link between paleoethnobotanical data and what inferences can be made from that data. Interpretation is also enhanced by archaeological context and other information sources.

Examples from a paleoethnobotanical study of carbonized plant remains from several sites in Oaxaca, Mexico, illustrate problems of interpreting household plant usage, household maize production, and possible field practices. Traditional historical concerns for botanical species and indicators of cultigen status are also discussed in relation to recovery and study methods. (19)

Howard, Jerry B. (Arizona State)

The Lehi Canal System: Organization of a Classic Period Irrigation Community.

With the completion of the Rowley Project at Park of the Canals, excavation data from a series of site types along the Classic period Lehi canal system are available for examining variability within a single irrigation community. Inter-site interaction and variability can now be characterized in terms of primary group composition, community patterns, status roles as reflected by mortuary assemblages and access to non-local exchange items. The irrigation community model of sociopolitical organization, suggesting the development of site hierarchies, production centers and exchange networks on localized canal systems is discussed. (43)

Howes, D. (see Bailey, R.) (6)

Hruby, T. H. (see Phagan, C. J.) (44)

Huang, Chun-Chang (Shaanxi, China)

Xishuidong, Early Paleolithic Cave Home Site From Central China.

Evidence of fire-using has been proven to exist at Xihoudu, North China; Yuanmou, South China; Lantian Man Site, Central China; and the famous Beijing Man Site, North China. But more solid evidence has been found recently from Xishuidong Cave Site. An ash layer, containing charcoal, burnt bones, fire-cracked rocks and burnt clay, has been tested chemically. The results indicates that the 1.6 meter thick ash layer was accumulated by repetitive occupancy of Early Paleolithic hunters. Lithic assemblages include scrapers, points, choppers and bola stones. Faunal assemblages are dominated by subtropical species and few carnivores. Most bones are heavily broken and burnt. All evidence indicates the Xishuidong site may have been used by Early Paleolithic (800,000-980,000 B.P.) hunters as a home base. (47)

Huckell, Bruce B. and Lisa W. Huckell (Arizona State Museum)
New Light on the Late Archaic Period of the Southern Southwest.

Recent excavations at three preceramic, Late Archaic sites in southeastern Arizona suggest that current views of the general Late Archaic subsistence-settlement system are in need of revision. Two deeply buried sites tested in the Cienega Valley demonstrate that pithouse villages of substantial size, complexity, and longevity, apparently dependent to a significant extent upon agriculture, are present by 2100-2300 B.P. Pithouses, storage pits, roasting pits, hearths, and burials are common features at these sites. Further, work at a site in the Tucson Basin has shown that agriculture, pithouses, and storage features may be present a few hundred years earlier. (40)

Huckell, L. W. (see Huckell, B. B.) (40)

Huelsbeck, David R. (Santa Clara)

Identification and Analysis of Faunal Remains: Short Cuts and Short Comings.

Like most shell middens, the Ozette Village Site yielded more faunal remains than could be identified and classified in detail. The different identification methods that were used are compared for economy and data yield: (1) simple identification of all elements (record: element, fragment, species); (2) simple identification of a sample of all elements; (3) streamlined identification of all elements (record: species); (4) intensive identification of only the most sensitive elements (record: element, fragment, sex, age). All "short cuts" reduce the data available for analysis. Analysts must select methods compatible with their research requirements. (12)

Hunt, Terry L. (Washington, Seattle)

Social Complexity and Hawaiian Prehistory: Is an Evolutionary Understanding Possible?

The islands of Polynesia have long been the focus of research and speculation on the evolution of social complexity. Hawaii, in particular, was the scene of highly structured and complex social and political organization by the time of European contact. While Hawaii has received the greatest attention, most treatments reflect a pre-scientific Spencerian concept of cultural change. Such accounts draw on synchronic comparisons, are necessarily directional, teleological, transformational and typological. Distinguishing material-determinist and functionalist models from historical explanations will be crucial in exploring a Darwinian paradigm for the evolution of social complexity. (17)

Huntington, F. (see Doelle, W. H.) (43)

Hurt, Wesley R. Jr. (Indiana, Bloomington)

Late Pleistocene Sites from Eastern Brazil.

Evidence for Late-Pleistocene sites in eastern Brazil is based upon three lines of evidence: (1) dated charcoal (2) thermoluminescence dating of heat-treated stone implements and (3) butchering marks on bones of extinct megafauna. In the interior of Piaui charcoal from fireplaces have dates ca. 31,500 B.P., while charcoal and heat-treated artifacts in the interior of Sao Paulo give dates greater than 11,000 B.P. Cut marks on megafauna bones from rockshelters in Minas Gerais, Bahia, and Sao Paulo indicate great antiquity. (31)

Iltis, H. H. (see Benz, B. F.) (19)

Ingbar, E. E. (see Todd, L. C.) (47)

Irwin-Williams, C. (38)

Irwin-Williams, Cynthia (Nevada, Reno)

Archaeological Units and Human Activities in the Southwest Archaic.

The Southwest Archaic record, reflecting long-term occupation by all mobile groups, provides a crucial conceptual and methodologic dilemma for archaeologists. At the heart of this dilemma is the relation between this record and the traditional concept of the archaeological site. An approach focused on the spatial distribution of individual artifacts in their macro- and micro-environmental contexts is seen as the best solution to the problem. Rather than focusing on the "site", the archaeological record is simply seen as the result of a spatially patterned system of behavior which produced an identifiable body of artifacts and features reflecting the specific activities involved. (26)

Isaacson, John (Illinois, Urbana)

Formative Structures From Nueva Era, Tulipe, Ecuador.

Recent excavations at the Formative Period site of Nueva Era, Tulipe, Ecuador, have produced evidence suggesting a period of volcanic activity in the northern Andes which caused the abandonment of Formative Period sites in the montana and sierra. Defined in the excavations were a number of partial structure floors with associated floor refuse and hearths. Comparison of archaeobotanical and lithic material recovered from the Middle to Late Formative occupation in the valley suggests a major shift in economic focus away from a mixed economy based on root crops with green corn as a dietary supplement, to a highly productive maize economy. Coupled with this change in economic focus is a change in the area's involvement in the long distance trade of obsidian. (48)

Isbell, William H. (SUNY, Binghamton)

The Absence of the Household in the Huari Archaeological Record.

The architectural record from the city of Huari, its provincial administrative centers, and rural settlements is examined for the existence of residential units that appear to correspond to modern households. It is argued that such units are not represented. The distribution of remains from domestic as well as craft activities does not support the existence of a household mode of production either. Ethnohistoric and ethnographic information is presented that raises significant doubt concerning the importance of the household as the basic unit of production in the Central Andes. (48)

Jackson, H. Edwin (Smithsonian)

Prehistoric Hunting-Gathering Societies and Sedentism in the Archaeological Record.

With increasing frequency, Middle and early Late Holocene archaeological sites in the midwestern and southeastern United States are being interpreted as evidence for relatively sedentary hunting-gathering settlement systems. Archaeological criteria for the identification of settlement permanency and year-round occupation versus repeatedly reoccupied locations remain problematical. The methodological and theoretical issues surrounding the determination of sedentism in the archaeological record are examined in reference to the Poverty Point Culture (1500-500 B.C.) in the Lower Mississippi Valley. A case study using faunal and other archaeological remains from the J. W. Copes site is presented. (34)

Jackson, Thomas L. (Stanford)

Obsidian Trade Across Ethnic Boundaries: A California Case in Points.

Archaeological observations of late prehistoric distributions of projectile points made of obsidian from various distinguishable geological sources do not coincide with predictions of obsidian distributions based upon economic models frequently employed by archaeologists. The obsidian point distributions can be explained when models are constructed which incorporate ethnographic data

regarding tribelet group autonomy, inter-ethnic boundary maintenance, and simple economic expediency. (51)

Jelinek, Arthur J. (Arizona)

Some Interpretations of Contextual Data From the Tabun Cave, Israel.

In the recent excavations of Lower and Middle Paleolithic levels at Tabun a considerable amount of information on the position and attitude of lithic artifacts was recorded. An examination of these data and their relationships to other kinds of information obtained from the collections shows some interesting regularities that may be more widely applicable in distinguishing natural and cultural factors that contribute to the final position of lithic materials during site formation. (55)

Jennings, J. D. (29)

Jensen, H. J. (see Cook, A.) (16)

Jiang, Peng (Jilin, China)

Late Paleolithic Hunting Strategies in Northeast China.

The main purpose of this paper is to study lifeways of Late Paleolithic hunters in Tunpei, northeast China. Our samples include five cave sites and seven open-air sites. Bone tools are mainly made of long bones of mammoth, wild horse, and bison. Both breakage and cut mark patterns on faunal remains indicate meat was the main diet. We believe this partly because periglacial environments are less productive in food resources. Lithic assemblages suggest that either chasing or corraling were the dominant hunting techniques. (47)

Jochim, M. (see Stewart, A.) (52)

Jochim, Michael (UCSB)

Late Pleistocene Refugia in Europe.

The dramatic environmental changes of the Late Pleistocene affected various parts of Europe in different ways. By adopting a wide regional perspective it is possible to examine the spatial patterns of these variations and to assess their implications for Palaeolithic populations. North-central Europe experienced the most pronounced fluctuations of climate and was virtually uninhabited during the last glacial maximum. This paper examines the possibility of population movements out of this region into refugia during periods of climatic deterioration and investigates the effects of such movements on cultural developments. (4)

Johannessen, Sissel (Illinois, Urbana)

Plant Remains and Culture Change: Are Paleoethnobotanical Data Better Than We Think?

Three qualities of the record of plant remains make floral analysis a powerful tool for investigating the dynamics of cultural change: (1) archaeological investigations allow consideration of the time dimension; (2) broad patterning in the plant remains record, when discerned through comparative analysis of large systematic collections, is significant in terms of shifts in human/plant behavior; and (3) the principles of plant ecology provide an empirical basis for inference from the plant remains about the evolving systems of human/plant interaction that produced them. Illustrations are taken from the comparison of collections of plant remains from Midwestern sites, which reveals distinct spatial and temporal trends. (53)

Johnson, Deborah Hondorf and Jeffrey L. Andrews (Andrews Atherton Inc.)

Close-Range/Terrestrial Photogrammetry: A Unique Mensuration Technique for Archaeology.

Close-range/Terrestrial Photogrammetry is an accurate, fast, economically practical mensuration technique that can be applied to anything which can be photographed. For archaeology and anthropology this can include sites, features, artifacts, extant villages, agriculture systems, resource areas, roadway networks, the human body, animals, dentition, etc. The imagery acquired serves two purposes: (1) achieved, it becomes both a visual record and a data base bank for future use; (2) compiled, it provides very accurate three dimensional measurements of the subject. Current research and results in the use of this technique in archaeology will be presented and discussed by the authors, along with potential applications. (2)

Johnson, F. (13)

Johnson, Ian R. (Queensland, Australia)

Geographical Plotting with the Minark Database System.

The paper describes the graphics interface developed to allow geographical mapping from site register databases managed by the Minark microcomputer database system. Sites and survey areas can be superimposed on geographical data, with windowing and scaling. The system can be rapidly configured to different regions ranging from local areas up to a continent. A menu system allows

selection of the geographical features to be plotted, colours, labeling, etc. Output can be produced on standard dot-matrix printers or pen plotters. A graphics display is not required. Maps output by the system are illustrated. (41)

Johnson, John R. (UCSB)

Ethnohistoric Research on the Northern Channel Islands.

Studies of Island Chumash baptisms and marriages in the mission registers kept by early Franciscan missionaries provide significant information about settlement patterns, demography, marriage patterns, and sociopolitical organization. Hypotheses regarding the determinants of observed ethnohistoric patterns may ultimately be tested using environmental and archaeological data. Conversely, certain archaeological phenomena may be elucidated through ethnohistoric studies. The value of ethnohistoric research to Channel Islands archaeology is illustrated in several case studies. (59)

Johnson, R. A., J. J. Stipp (Miami), M.A. Tamers (Alpha Analytic), G. Bonani, M. Suter, W. Wolff (ETH, Zurich)

Comparison of Thermoluminescence Dates with Radiocarbon Dates by Beta Counting and Accelerator Techniques.

Sherds can be dated by four independent methods: C14 beta counting, accelerator measurements on carbon traces within the sherd, thermo-luminescence, and stylistic form. Age analyses of materials from several sites are shown in this work. Each technique has its own frequently encountered non-laboratory sources of error. This is particularly serious in situations where there is a paucity of material and little stratigraphic control. A combination of at least two independent techniques, particularly C14 and TL, is indispensable for the highest level of confidence. (46)

Jones, Anne Trinkle (National Park Service, Tucson)

Spatial and Temporal Variations in Grand Canyon Subsistence and Technology.

Data from recent test excavations of five stratified sites along the Colorado River in the Grand Canyon are used to study changes in subsistence and technology through times. The sheltered midden sites span 130 river miles on both the left and right banks, and encompass preceramic through historic occupations. Analyses of flotation, pollen and macrofossil samples show excellent preservation of materials from several canyon microenvironments. Variations in lithic and ceramic technologies relate these specific environments to a seasonal round of activities and to the interaction of the inhabitants with adjacent groups. (3)

Jones, G. T. (see Stein, J. K.) (12)

Jones, Grant D. (Hamilton)

Mayas and Spaniards in 16th Century Belize: Foundations of a Frontier Colony.

New and previously identified ethnohistorical evidence poses several fundamental questions concerning 16th century Belize. First, how can ethnohistorical evidence be applied to the identification of archaeological sites that might demonstrate occupational continuity from Late Postclassic through Historic periods? Second, of what significance were native polities in Belize for early Maya-Spanish economics and social relations? Third, what effect did Spanish colonization activity have upon population distribution of these frontier Maya polities? Fourth, what strategies did Maya societies utilize in response to these early colonization efforts? (21)

Jones, K. T. (see Metcalf, D.) (7)

Jones, Kevin T. (Utah)

Hunters or Scavengers? Evolutionary Theory as a Tool for Identifying and Explaining Prehistoric Behavior.

The use of evolutionary theory to predict human or hominid behavior under given environmental circumstances enables behavioral hypotheses to be tested archaeologically. This approach is in many ways superior to the usual procedure of "reconstructing" past behaviors from archaeological data because the data are often too sparse to permit complete or compelling behavioral "reconstruction". Evolutionary ecology is used in generating the hypothesis that small animal hunting should have been a more common behavior than scavenging for early hominids at Olduvai Gorge. Tests of the hypothesis yield a more robust explanation for the archaeological record than have traditional "reconstructions". (17)

Jones, Peter R. (Harvard)

Reassessment of Developed Oldowan and Acheulean Bifaces from Olduvai Gorge, Tanzania.

Extensive replication experiments in all of the Olduvai raw material types has revealed some technological reasons for the morphological differences between biface assemblages there. Major

factors noted are: (1) size and type of raw material blanks, (2) flaking qualities of different raw materials, (3) degree of re-sharpening, and (4) distance from raw material sources. An explanation for the consistent tear-drop shape of Acheulean bifaces is seen in the relationship between increasing usable cutting edge and the inevitable increase in weight. (56)

Joslin-Jeske, Robert (Northwestern)

An Economic Analysis of the Lithic Assemblage from the Kuhlman Mound Site, Adams County, Illinois.

The Kuhlman Mound Site is a Late Woodland (ca. A.D. 750) mortuary site near Quincy, Illinois, in the Mississippi River Valley. The site is atypical of Late Woodland mound sites in that it contains a number of large, limestone slab crematory structures. Likewise, the lithic assemblage from Kuhlman is atypical. An economic-based lithic analysis explores the pattern of raw material selection, use, and discard from a series of features at Kuhlman. A comparison is made with the lithic assemblage from the Deer Track site, a contemporaneous habitation site 25 miles north in the Mississippi River Valley. (8)

Juell, Kenneth E. (Utah) and Dave N. Schmitt (Oregon State)

Culturally Versus Naturally Deposited Bones: Explorations in Small-Animal Taphonomy.

Archaeologists have long recognized that non-human agents such as predators and collectors can contribute small-animal bones to archaeological sites, but little research aimed at distinguishing bones deposited by humans from ones deposited by non-human agents has been conducted. Comparative analysis of damage to small-animal bones recovered from archaeological hearth debris, burrow deaths, and modern coyote scats, woodrat houses, and owl pellets from great Basin sites is presented. Results suggest that accumulating agents may be recognized by distinctive bone-damage patterns. Suggestions are offered for developing a method to aid interpretation of small-animal remains in archaeological contexts. (7)

Juli, Harold D. (Connecticut)

Middle Woodland Ceramics in Eastern Connecticut: Form, Function, Context and Culture History.

Recent archaeology in eastern Connecticut has yielded new information making it possible to evaluate Middle Woodland culture history within a regional context. The Middle Woodland ceramic inventory is described and interpreted. Five C14 dated, provenience controlled assemblages are studied to determine: (1) ceramic morphology and decorative variability, (2) stratigraphic relationships and continuities, (3) vessel function. Intra- and inter-site activities are reconstructed. Together with additional data, the current status of the Middle Woodland culture system in eastern Connecticut is defined. (5)

Kaiser, Timothy (Toronto)

Formalist and Historical Materialist Approaches to Pottery Production in Non-Stratified Societies.

Formalists and historical materialists tend to view the organization of pottery production in quite different ways and consequently are predisposed to collect and use different kinds of data. Not surprisingly they also offer different explanations for changes in pottery production in non-stratified societies. Using a range of data from the Balkan Neolithic, this paper critically evaluates how each approach uses ceramic data and how each accounts for changes in both the organization of pottery production and in the social context of that production. (49)

Kalin, Jeffrey (Primitive Technologies Inc.)

Life Before Sherds: The Replication and Use of Woodland Ceramic Vessels.

Through the replication and use of prehistoric pottery, the life sequence of a ceramic vessel may be studied. An analysis of this process can provide insights into the various attributes present in ceramic sherds. Beginning with the acquisition of clay, the events of preparation, construction, firing, use, repair, and rejection are explored. (5)

Kamp, Katheryn A. and John C. Whittaker (Grinnell)

Small Site Economic Integration Among the Sinagua.

In the summer of 1984, Grinnell College conducted the first season of excavation at Na 17,957, a small Padre-Elden Phase village of approximately 10 masonry rooms and a dozen pithouses. Preliminary analyses show that despite its unimpressive size, NA 17,957 was involved in manufacturing argillite, turquoise, and malachite ornaments. This suggests the possibility of craft specialization supplementing subsistence agriculture, and involving small sites in widespread exchange networks which included such local centers as Winona Village and Ridge Ruin. Further investigations are planned to help clarify the role of small sites in the Sinagua regional economic system. (40)

Kane, A. E. (see Robinson, C. K.) (44)

Kane, A. E. (see Lipe, W. D.) (44)

Kane, Allen E. (Dolores Archaeological Program) and Richard H. Wilshusen (Colorado)
Social Organization and Cultural Process at Dolores.

Manifest forms of social organization, including forms of integration and economic organization are critical constraints in cultural systems. In context of a least-cost model of behavior, organizational change is a response to change in population or resource procurement strategies. Expectations for economic and social differentiation and ritual behavior are developed from the model and tested with data from the Dolores River Valley. Predictions of the model are evaluated, and alternate models are proposed for areas where least-cost predictions were not actualized. (44)

Kaplan, L. (19)

Kaplan, Lawrence (Massachusetts, Boston), Elizabeth Bonnier (French Institute of Andean Studies) and Catherine Rozenberg (French Institute of Andean Studies)

Archaeological Botany of the Central Highlands Site of Tantomayo: Late Pre-ceramic to Early Horizon.

The Tantomayo ruins are open sites about 4000 meters above sea level on the eastern Andean slopes in the upper Marañon drainage. Carbonized plant macrofossils, pollen, and phytoliths are under study to determine subsistence patterns and possible evidence for commerce with the eastern slope lowlands. Vegetation appears to have been stable throughout the period of occupation during which wild and possibly cultivated quinoa came into use. Biogenic opal remains reveal a surprisingly high frequency of panicoid grass phytoliths which suggest the use of grass materials from the eastern slope lowlands. (42)

Keel, Bennie C. (National Park Service, Washington D.C.)

Assessing the Affects of the Federal Archaeology Program: A Federal Perspective.

In response to massive water project development in the post-World War II era, Congress recognized the imminent loss of archaeological data and responded with the Reservoir Salvage Act. This Act became the foundation of the current federal archaeological program. The affects of this Act and successive statutes are traced in terms of funding, growth in professional numbers and numbers of projects. The affect of the program is evaluated in terms of the archaeological knowledge generated regarding chronology, culture content, and cultural process. (18)

Keeley, Helen C. M. (Ancient Monuments Laboratory, London)

Agricultural Field Systems in the Salado Basin, Northern Chile.

Agricultural terraces are one of the most widespread landscape features of the arid and semi-arid tropical and subtropical regions of the Andes. In northern Chile terrace cultivation is the main method of agricultural production in the Andean piedmont (2,500-4,000m. above sea-level). Today most of these terraces lie abandoned and very little is known about past agricultural practices and economy in the area and their implications for archaeology and rural development. Recent research at Paniri (Late Intermediate) and other archaeological sites in the Rio Salado basin (with special emphasis on soil studies) illustrates the diversity and complexity of agricultural systems in an arid environment. (40)

Keeley, Lawrence H. (Illinois, Chicago)

Lithic 'Economy' and Style: Some Magdalenian Examples.

The results of microwear and related analyses on artifacts from three Magdalenian sites—one in Northern France and two in Northern Spain, representing what are supposed to be two regional facies of the Magdalenian—are discussed. The material analyzed from all three sites dates between 15,000-13,000 B.P. Two sites give evidence of being specialized hunting stations while one appears to represent a less specialized and more intense occupation. The comparison of these sites indicates that some of their similarities are related to common patterns of tool manufacture and use, while their "stylistic" differences are related to the size and quality of available lithic raw material. (57)

Keene, A. S. (see Saitta, D. J.) (49)

Kehoe, Alice B. (Marquette)

Three Hearths: What Can They Say?

As Ardener noted, we anthropologists (including archaeologists) are Maxwell's Demons, basically similar to the phenomena we study. It is scientism, not science, to ignore that which makes human phenomena interesting. That is the difference between human and non-human phenomena. Ethnography helps us analyze these differences by adding to the number of models we can refer to, and by

sensitizing us to the emic nature of our premises. A Woods Cree extended family camp is used as an example of the potentials and limitations of broadening archaeology through ethnography. (51)

Kellogg, Douglas C. (Maine)

Paleoenvironmental Reconstruction of Coastal Geomorphology for Muscongus Bay, Maine.

Seismic profiling, vibra-coring, and local relative sea-level rise data are being used to construct the local marine environment for more than 4000 years of occupation in the Muscongus Bay region of Maine. The major concerns of the research are changes in the shoreline configuration, and shifts in the locations of ephemeral, inter-tidal environments, especially mudflats, where shellfish resources are found. (12)

Kelly, Robert L. (Michigan)

Technology and Hunter-Gatherer Mobility: A Method

It is clear that mobility is an important aspect of hunter-gatherer adaptation. We now face the problem of inferring different types of mobility strategies from archaeological remains. One inferential procedure is discussed in this paper which examines the relationship between lithic technologies, the inherent characteristics of lithic raw material, and the nature of different types of mobility strategies. It is suggested that mobility strategies can be inferred from regional archaeological patterns given: (1) knowledge of the raw materials' characteristics, (2) reconstruction of the technologies used at a site and (3) a knowledge of site reoccupation. The method is demonstrated on material from the Carson Sink, Nevada. (47)

Kelsay, Richalene (San Diego State)

A Late Classic Lithic Finishing Station at Buena Vista, Belize.

Surface survey operations at the minor center of Buena Vista in the Upper Belize Valley have identified a probable locus of secondary trimming and final finishing activities involving local cherts as well as obsidian preforms. Both soft hammer percussion and pressure techniques appear to be represented by waste material concentrated on the northeast edge of a large open plaza on the center's east side. The nature, extent, and probable chronology of the workshop is described. The relationship of this finishing station to several loci of apparent primary lithic reduction at a nearby site is discussed. (21)

Kent, Susan (New Mexico)

Theory and Truth in Archaeology: The Search Continues.

There are archaeologists who believe that theory must equal truth, which then conditions individuals' philosophical and theoretical orientations. The relationship between these two concepts is explored from historical and contemporary contexts, and viewed within the framework of intrasite spatial analyses. The current dissatisfaction in the general field of archaeology (as espoused by Flannery, Dunnell, etc.) is discussed. The future of archaeological theory need not be as bleak as some believe, and instead is potentially bright, once we recognize and deal with these problems, thereby allowing archaeologists to again devote themselves fully to the study of the past and, most importantly, to the processes that shaped it. (2)

Kenyon, D. (see Hatch, J.) (1)

Killingley, J. S. (see Koerper, H.C.) (40)

Killion, Thomas W.

Infield Gardening Practices in the Sierra de los Tuxtlas: Building a Foundation for Archaeological Inference.

Infield gardening practices in the Sierra de los Tuxtlas, Veracruz, Mexico, constitute one component of the overall system of agriculture practiced by the contemporary peasant population. Horticultural activities around the place of residence condition the location of access routes, determine where animals are penned, and form an envelope around other areas of small scale industrial activity and storage. Activities conducted within dooryard garden borders result in a distinctive pattern of refuse disposal and dooryard maintenance. Interview, observation, and surface excavations at modern households show that the organization of domestic and gardening activities can be related to distinctive patterns of material residue. Dooryard gardening is a common feature of tropical living today as well as in the past. This research provides a foundation for inferences by archaeologists concerning the interpretation of prehistoric settlement in the humid tropics. (28)

Kimball, Larry (Northwestern)

A Consideration of the Role of Quantitative Archaeology in Theory Construction.

One of the less discussed aspects of quantitative archaeology is its relation to theory. It appears that higher priority is given to the selection of the "best solution" to a problem. Consequently, the

relevance of the linkage among problem definition, its arguable resolution, and the method chosen to measure relationships in the empirical domain is reduced to secondary importance. This resulted in two approaches: (1) *best solution*—criticism and replacement of prior techniques with new ones, justified on statistical grounds, (2) *pattern recognition*—employment of statistical procedures to detect patterns, which are held to exist external to the analyst's mind. In terms of relevance to theory, both are undefendable because of the *implicit* assumption that "best solutions" exist independent of theory. Possible resolutions of this problem are explored in this paper. (9)

King, Eleanor (Pennsylvania)

Surveying the Ancient Maya Settlement at Colha, Belize, 1983-1984.

Recent exploration and mapping at the lithic production center of Colha has yielded information on site boundaries as well as intra-site spatial arrangements. Special structural configurations and activity areas have been tentatively identified, and features such as linear ridges and *aguadas* recorded. Whereas the ridges show variation in associations that suggest a range of possible functions, the numerous *aguadas* or waterholes dotting the landscape appear to have served as reservoirs for the surrounding, loosely-agglutinated settlement. Preliminary evidence indicates that these *aguadas* were prehistoric constructions designed to retain rainwater because local groundwater is brackish. (54)

King, Kathryn A. (Arkansas)

Southeastern Middle Woodland Earspools of the Hopewell Period.

Seventy copper earspools from 25 Middle Woodland sites in the southeastern United States are analyzed for their morphological variation and technology. The position of various morphological and technological attributes within an attribute hierarchy for the earspools, as well as the behavioral meanings of those attributes, are assigned deductively on the basis of their visibility and position within a manufacturing sequence. The assignments of meaning of attributes then are tested on the basis of the geographic distributions of alternative attribute states. The analysis gives insight into the nature of "Hopewell Interaction" during the Middle Woodland. (16)

King, T. F. (18)

Kintigh, K. W. (50)

Kintigh, Keith W. (UCSB)

Quantitative Approaches Well-Suited to Archaeological Problems.

Archaeologists must untangle the multiplicity of factors involved in the creation of the archaeological record. However, the ability of quantitative techniques to assist these efforts is confounded by ill-behaved distributions of relevant variables, widely ranging sample sizes, and the need to take into account our knowledge, however limited, of the contexts being analyzed. This paper examines the nature and role of techniques designed to solve archaeological problems and other approaches, such as simulation and exploratory data analysis, that seem particularly well-suited to large classes of archaeological problems. (9)

Kirch, Patrick V. (Washington, Seattle)

Divergent Evolution in Polynesia.

The Polynesian societies, demonstrably derived from a common ancestral society over a period of 3,000 years, offer an unparalleled opportunity for the study of divergent evolution. In this paper a tripartite method for the analysis of divergent evolution in Polynesia is discussed including: (1) controlled ethnographic comparison, (2) lexical reconstruction, and (3) archaeological investigation. The paper also focuses on several of the dominant processes underlying divergent evolution in Polynesia, including random "drift", adaptation to diverse and changing environments, demographic change, production intensification, and competition. (17)

Kirkorian, Cecilia S. (Historical Perspectives) and Nancy S. Dickinson (New York)

Prehistoric Ceramic Sample Analysis from Southwestern Connecticut.

Examination of a prehistoric ceramic sample from an estuarine site in southwest Connecticut investigated the significance of attribute and computer-aided statistical analyses. Additionally, the utility of x-ray diffraction, x-ray fluorescence, and thin-section microscopy was tested. As the archaeological data base decreases and the use of data processes continues, it is imperative that: (1) the benefits of both macro- and micro-level analyses are acknowledged, (2) even small samples are studied, and (3) local studies are combined for a regional perspective. (5)

Kisselburg, JoAnn E. (Arizona State)

Hohokam Plainware at La Ciudad: Solving Site Specific Problems in Chronology and Community Pattern.

Phyllite schist as a tempering material is traditionally associated with sites ringing the Salt River Basin and considered intrusive into sites in the Basin. However, 40% of the plainware ceramics

recovered at La Ciudad in downtown Phoenix are tempered with phyllite-like schist. Large quantities of this locally available, unworked schist occur over the site. The distribution of this temper class shows an increase in abundance over time, but between A.D. 950 and A.D. 1050, there is a greater range of variability among and between household groups. Implications of this variability are discussed with reference to temporal, ethnic and functional factors. (11)

Klesert, A. L. (see Andrews, M. J.) (30)

Klesert, Anthony L. (Navajo Nation) and H. Barry Holt (Bureau of Indian Affairs)
Archaeologists, Native Americans, and Archaeology on Indian Lands.

With continued development taking place on Indian lands throughout the country, and in light of the special status accorded these lands and Native American concerns and interests by law and regulation, it is increasingly essential that fruitful interactions between archaeologists and Native American groups be maintained. Preliminary results of questionnaires submitted to professional archaeologists and native groups are summarized and discussed. These results indicate the relationship is in need of improvement and point out a number of critical misconceptions on the part of both the archaeologists and the native groups. (30)

Knapp, A. Bernard (Sydney, Australia)

The Rise of Social Complexity at Pella, Jordan.

As a society's political institutions and economic mechanism grow more complex, certain inter-related phenomena tend to occur: intensification of local production; social stratification; centralization and control over basic resources; participation in interregional exchange systems. Excavations at Pella in Jordan over the past six years have revealed evidence of an impressive Bronze Age culture, evidenced by high quality, locally produced goods and "luxury" items imported from the Aegean, Cyprus, and Egypt. Pella's role as a center for local trade, and external demand for products available may have spurred local elites to formalize the internal and external organization of trade, and positive feedback from the expanded production system coupled with entry into an international exchange network (the eastern Mediterranean) help to explain the growth of complex, stratified society at Pella. (55)

Kneebone, Ronald (New Mexico) and Christopher Pool (Tulane)

Archaeological Investigations of Intensive Ceramic Production: A Recent Discovery at Comapan, Veracruz, Mexico.

The effect of large scale production on the development of complex societies has been much debated in archaeology in recent years. The recent archaeological discovery of an intensive preHispanic ceramic production area, containing 34 kilns in 3.5 hectares, represents an unprecedented research opportunity. Spatial and contextual analyses are presented to elucidate two areas of concern in archaeological interpretation: (1) criteria for the identification of areas of intensive ceramic production, and (2) internal structure of kilns and kiln areas, which have implications for the organization of production. (27)

Knight, George C. (Washington, St Louis)

Pragmatics and Meaning for the Archaeological Record.

One historically lingering problem in archaeology concerns the assignment of meaning to archaeological materials. However overworked this may seem, writings explicit upon the problem remain less than proportionate to its importance. Taking to heart Binford's ("Meaning, Inference, and Material Record", 1982) apprehensions regarding suppositions about prehistoric peoples' cognitive activities, this paper takes steps toward an explicitly archaeological theory of meaning. It is argued that, without resorting to a linguistic analogy, a pragmatic theory built on use-conditions can make congruent our statements about the archaeological record, and the perceived technological and ecological contexts of past cultural systems. (2)

Knudson, R. (see Barnes, M.) (46)

Knudson, Ruthann (Woodward-Clyde)

Archaeology in Contemporary Cultural Resource Management.

Archaeology within contemporary cultural resource management (CRM) involves both technical identification and recovery of prehistoric and historic research values, and the management of those resources in a context of competing public values. CRM has contributed to a better defined nationwide archaeological resource base, identified a broad array of sites with significant research values, and preserved major sets of endangered scientific information. It has provided important developments in site survey and evaluation methods and techniques. All these provide a basis for discussing likely future developments in archaeological resource management. (14)

Koerper, Henry C. (Cypress), John S. Killingley (Scripps) and R. E. Taylor (UCR)

Isotopic Evidence for Southern California Paleoenvironment During the Little Ice Age.

The 180 record in *Mytilus californianus* shells from a C14 dated Late Prehistoric coastal archaeological site in southern California suggests ocean surface water temperatures 30C cooler during the Little Ice Age than surface temperatures recorded today. Causes of this colder climatic regime are briefly explored. Lower summer and winter air temperatures and reduced precipitation are inferred from the ocean paleotemperature estimates, but these conditions do not indicate any significant negative impact on the subsistence activities of coastal Southern California prehistoric hunters and gatherers. (40)

Kohler, T. A. (6)

Kohler, T. A. (see Matthews, M. H.) (19)

Kohler, Timothy A. (Washington State) Janet D. Orcutt, Kenneth L. Petersen, and Eric Blinman (Dolores Archaeological Program)

Anasazi Spreadsheets: The Cost of Doing Business in Prehistoric Dolores.

By utilizing available data on site location, numbers of households per site, local climate and other local environmental characteristics, estimates of the costs of obtaining the necessary protein, calories, water and fuel at each site through time can be calculated. Site location and growth will be examined for the extent to which they correspond to "least cost" or "power maximizing" models for human behavior, leading to more general comments about the role of efficiency in cultural adaptation. (44)

Konigsberg, L. (see Buikstra, J.) (51)

Kornfeld, Marcel (Massachusetts, Amherst), and George C. Frison (Wyoming)

Geophysical Surveying at Hunter-Gatherer Sites: The Bugas Holding Example.

Geophysical surveying techniques are rarely used in hunter-gatherer archaeology, yet in a few cases their effectiveness has been demonstrated. Before excavating the Bugas Holding site was intensively surveyed with a magnetometer and a resistivity meter. Numerous anomalies were present, a few of which were in the area that was later excavated. Distributional patterns of the anomalies from the two geophysical methods are compared. These are further compared with the excavated material. On the basis of these patterns we suggest additional magnetometer and resistivity surveying as a potentially productive method for defining several aspects of the archaeological record and its context at the site. Further, we suggest that geophysical surveying of northwestern Plains and hunter-gatherer sites should become more common, joining the tradition of Plains village and historic site studies, where these techniques are frequently used. (46)

Korsmo, Tom and Fred Plog (New Mexico State)

Computer Applications in the Field and Lab.

Early computer applications in archaeology were limited largely to statistical analyses and data base management. In recent years, computer technology has been applied to different pieces of field and laboratory equipment. Archaeologists from NMSU and UNM have used that equipment in a variety of field and teaching situations. Experience with the following devices is summarized: laser transit, proton magnetometer, digital calipers, digital balances, bar-code reader, portable "notebook-size" computers. The advantages and disadvantages of these technologies and systems integrating them is explored. (41)

Kosakowsky, L. J. (see Culbert, T. P.) (39)

Kowalewski, Stephen A. (Georgia)

Merits of Full-Coverage Survey: Examples from the Valley of Oaxaca, Mexico.

Full-coverage, regional surface survey can address questions of internal shatter zones and external boundaries, hierarchical or functional inter-dependency, variables dependent on role in the regional system, issues related to the spacing of sites vis-a-vis each other, distribution of rare but important items, analytical manipulation of scale, and complexity in general. Such matters are beyond the research of sample surveys as currently known. Distributions of environmental and archaeological variables are best evaluated by contiguous coverage. These advantages and the low relative costs make full-coverage preferable for most research and land management purposes. (50)

Kowalski, Jeff (Northern Illinois)

Connections between Northern Yucatan, the Pasion Drainage, and Highland Chiapas-Guatemala During the Terminal Classic.

This paper presents evidence that significant contacts occurred among the sites of Chichen Itza in Yucatan, and Seibal and Quen Santo, Guatemala, during the period from about A.D. 850-900. Epi-

graphic and architectural evidence link Chichen with Quen Santo. Sculptural subject matter, epigraphy, iconography and architectural form, and technology link Seibal and Chichen. This evidence suggests that it was during this period that Itza groups from eastern Tabasco and southwestern Campeche gained control of key highland-lowland trade routes, bring to an end the competition for these routes that had characterized the earlier Epiclassic period. (20)

Kra, Renee (Yale) and Lucianne Lavin (Yale Peabody Museum)

Survey of Ceramics from the Lower Quinnipiac River Valley and Adjacent Coastal Areas of Connecticut.

Ceramic assemblages are analyzed from several sites located in the lower Quinnipiac River drainage and adjacent areas of southern Connecticut. Quantitative attribute analysis and typology of sherds and minimum vessel counts are used to reconstruct pottery sequences for the drainage, and to test the utility of the Smith-Rouse typology currently used by workers in southern New England and New York. The study demonstrates that quantitative analysis of assemblages with little provenance may provide valuable distributional, chronological, and associational data for regional cultural reconstruction and assessment of current analytical and classificatory models. (5)

Kramer, C. (27)

Kreid, Judith A. (Politecnica Litoral, Ecuador)

A Late Valdivia Domestic Household at Real Alto and Its Role in the Production Process.

It has been convincingly argued that a social transformation from egalitarian to chiefdom level society occurred at Real Alto, southwest coastal Ecuador, between 3000 and 1500 B.C. By Valdivia VII times, a reduction in the on-site population and corresponding establishment of surrounding satellite communities engaged in fulltime food production, indicates Real Alto's function as a central place ceremonial center. Focussing on a Valdivia VII period structure at Real Alto, the correlation between artifact dispersion and contextual data is examined in an attempt to infer household activity patterning and, thus, reconstruct domestic production and its relation to the overall production process. The degree to which an increase in sociopolitical complexity is reflected at the household level is demonstrated. (48)

Kristiansen, Kristian (Copenhagen, Denmark)

Production, Surplus and Social Organization in the Neolithic of Temperate Europe 4000-2000 B.C.

Two variants of tribal structure characterized temperate Eurasia during the 4th and 3rd millennia B.C. The 4th millennium was characterized by an agricultural economy based on shifting cultivation in a forest environment, with the dead buried in megalithic monuments. The 3rd millennium was characterized by a pastoral economy in an open landscape, with the dead buried in earthen round barrows. This paper discusses the articulation of production, surplus mobilization, and hierarchization with reference to these two variants of tribal structure. The evolutionary trajectory of their transformation is also outlined. (49)

Kuhn, Robert D. (SUNY, Albany)

Trace Element Analysis of Ceramics as a Means of Studying Late Woodland Interaction Systems in New York State.

This study attempts to examine interaction patterns by identifying foreign ceramic sherds using trace element analysis. Ceramics from a series of Late Woodland sites in New York State were used as control samples for establishing regional differences in the trace element composition of clay resources. Ceramic pipe fragments were then analyzed in an attempt to identify foreign pipes in village assemblages. The results indicate that a substantial proportion of pipe fragments were manufactured using clay from outside the region. It is suggested that these artifacts may have represented preferred trade or gift items. The results of this study indicate that interaction between villages during the Late Woodland Period in New York may have been much greater than previously proposed. (40)

Kusmer, Karla D. (Simon Fraser)

Owl Pellet Taphonomy: Archaeological Considerations.

Owls are common contributors to microvertebrate deposits in caves and rockshelters. Determination of agents responsible for deposition of small animal remains is important for both cultural and paleoecological reasons. Discrepancies in previously reported characteristics of owl deposited bone indicate the total range of variation in the characteristics has not been documented. In this paper processes involved in owl pellet formation and deposition are explicitly considered to extend our knowledge of this variation. Bone characteristics derived from actual analyses of pellets from two owl species are discussed. (7)

Kvamme, Kenneth L. (Denver)

The Fundamentals and Potential of Geographic Information Systems Techniques for Archaeological Spatial Research.

GIS techniques offer great potential for investigating spatially distributed phenomena. Basic concepts, beginning with the construction of primary data base "layers" such as an elevation surface and hydrology net, are illustrated. From these, secondary analytical surfaces such as slope and aspect, or various water distance surfaces, may be derived. One benefit of GIS is its ability to derive spatial information that was previously impossible to obtain due to sheer number of calculations. Various measures of view, shelter, terrain roughness, and least-effort travel distances illustrate this property. A second benefit is graphic capabilities. Mapping routines allow the portrayal of information previously unimagined in traditional cartography. (6)

Kwas, Mary L. (Tennessee Department of Conservation)

The Ritual of the Mounds: A Public Education Film.

Most films about archaeology that are currently available suffer from being out-of-date, misleading as to proper field techniques and generally dry and unimaginative. Use on the college level can be supplemented by caveats and explanations of the instructor, but these films prove ineffective for use with the general public and younger students. This film was created to provide a lively learning experience for the non-archaeologist, showing an accurate portrayal of the field experience, as well as broaching the reasons for archaeology and its techniques. It is equally effective for use on the college level. (46)

Lacy, D. M. (see Dincauze, D. F.) (18)

Laczko, Gina, David E. Doyel, and David R. Wilcox (Pueblo Grande)

Pueblo Grande: A Central Place in the Salt River Valley.

While many archaeologists use the concept of "central place" in defining interaction and political organization, most agree that problems arise when market-derived indicators are applied to non-market systems. At the Hohokam site of Pueblo Grande alternative indicators of centrality are proposed. These include specialized features found through time at the site including a platform mound, ball courts, and a big house. In addition, site location with respect to resource zones, hydraulic systems, and other sites in the valley is discussed. These data support the hypothesis that Pueblo Grande was a primary central place for the prehistoric Hohokam in the Salt River Valley. (43)

Lafferty, Robert H., III (Arkansas)

Anthropological Theory and GIS Analysis.

Recent work in predictive modeling in the lower Mississippi Valley has resulted in several statistically valid models using GIS approaches and Rational Location Choice Theory. Tests of the theoretical basis of the models have failed to disconfirm the theoretically derived hypotheses. The application of GIS data should rapidly increase the sophistication of our predictive models and explanatory theory and radically alter our understanding and statistical approaches to the environment. (6)

Lanier, George and Walter A. Dodd (Utah)

The Systematic Identification of Stone from Archaeological Sites.

Several fundamental problems exist in regard to the criteria by which archaeologists hand-identify lithic materials. The problems stem from common use of folk taxonomies in both field and laboratory. Such folk classifications often lack consensus, and the ideas on which they are based are inconsistent with current petrological practice. A more coherent system of classification, derived from well-established standards in petrology, is presented as a means of improving rock identifications. Using specific examples from Utah, criteria are given for several problematical types (chert, chalcedony, basalt, etc.). It is emphasized that agreement on basic concepts must precede higher-level analyses. (8)

Larick, Roy R. (Nairobi)

Interethnic Conflict and Iron Smelting in Pastoralist East Africa.

Among precolonial East African pastoralists, interethnic warfare determined where iron smelting, a stationary activity, could be safely performed. The location of furnace remains suggests the changing local political situation. Ethnohistorical research among contemporary blacksmiths corroborate the archaeological finds. Eighteenth and early 19th century blacksmiths smelted on high mountain ridges where they remained inaccessible to raids. As inter-group conflicts diminished during the initial period of colonial rule, smelting moved to canyon mouths. They now work in totally accessible locations associated with a developed infrastructure. (56)

Larralde, Signa L. (New Mexico)**Surface Distributions and Chronological Control.**

When archaeological sites cannot be dated by independent methods (C14, archaeomagnetometry), archaeologists depend on temporally diagnostic artifacts or assemblages for chronological control. If "diagnostics" are not present, sites are often judged insignificant. Yet single episode use of places by prehistoric peoples is difficult to identify, even with well-controlled dates. Indeed, surface and sub-surface assemblages are likely to be chronologically (and perhaps functionally) mixed. Under these circumstances, what does "chronological control" (or lack thereof) mean? What are its implications for understanding the formation of the archaeological record? Surface artifact distributions from southwestern Wyoming are used to explore these questions. (26)

Larson, Mary Lou (UCSB)**Changing Site Function on the Northwest Plains.**

Chipped stone from a single multicomponent site in Wyoming is analyzed to focus on changes in site function. The site contains several cultural levels dating to between 8000 and 4500 years before present and after 3000 years before present. The comparison of raw material types, curation practices, and manufacturing sequences from the different levels allows conclusions to be drawn about the activities at the site. Differences between levels are, in part, attributable to changes in the cultural system. These differences will be discussed in reference to theories about changing adaptations during the Archaic Period in the region. (36)

Laville, Henri (Bordeaux I)**Environmental Changes and the End of the Paleolithic in the Perigord Region, Southwestern, France.**

Recent sedimentological, palynological and paleontological evidence together with radiometric dates from the Perigord suggest that it was with Dryas I that the process leading to Holocene climatic conditions began. The Bolling and especially the Allerod oscillations were very marked in this region, whereas the intervening Dryas II cold episode was short and of slight intensity. In the context of this climatic trend toward full interglacial conditions, Dryas III represented a notably abrupt, brutal climatic crisis. It was under these changing and strongly contrasted environmental conditions that the "Azilianization" process took place, leading on a regional scale to the end of the Paleolithic and its forms of adaptation. (52)

Lavin, L. (see Kra, R.) (5)**Lavin, Lucianne (Yale Peabody Museum, New York)****Pottery Classification and Cultural Models in Southern New England Prehistory.**

Ceramic assemblages from Connecticut are analyzed to help clarify some problems discussed by researchers at the First Annual Seminar on Northeastern Pottery at Yale Peabody Museum last fall. They include methods of analysis and classification, ceramic characteristics as time-markers, and the utility of non-contextual studies. The study confirms the necessity of quantitative analysis of sherd and minimum vessel counts, the utility of both modal and typological analyses, and the significance of non-contextual assemblages, while acknowledging the priority of contextual studies. It suggests a model of gradual material culture replacement of ceramic sequences in southern New England and southern New York. (5)

Lee, T. (28)**Lees, William B. (Kansas State Historical Society)****Perspectives on the Development of Historical Archaeology on the Great Plains.**

Historical archaeology on the Great Plains dates from the early 19th century and is somewhat unique in North America in that it traces its origins to anthropology rather than history. This association with anthropology was shortlived, however, and the development of historical archaeology on the Great Plains was stunted in comparison to its emergence within anthropology in the eastern United States following the development of the "new archaeology" in the 1960s. Historical archaeology's retarded development in the Great Plains is reviewed, with a focus on the role of historical archaeology in the Interagency Archaeological Salvage Program following World War II. (30)

Lekson, Stephen H. (National Park Service, Chaco Center)**The Idea of the Kiva in Anasazi Archaeology.**

Archaeologists' notions of the kiva together with a fixation on origins has seriously impeded Anasazi archaeology for over fifty years. Hundreds of perfectly innocent pithouses have been forced to masquerade as kivas, by archaeologists anxious to fit the record into expected formal and social evolutionary sequences. The history of the archaeological kiva is briefly examined, and the damaging effects of the received view are analyzed. (3)

Lentz, D. (see Smith, C. E.) (40)**Leonard, Robert D. (Southern Illinois, Carbondale)****Late Puebloan Subsistence Diversification: A Product of Sample Size Effects.**

Recently a number of researchers have made a convincing case for the use of a greater number of plant and animal species, or diversification, by late Puebloan peoples of the American Southwest. Diversification is regarded as the subsistence strategy utilized preceding abandonment. It is seen, variously, as being the expected consequence of increased agricultural production, decreasing agricultural or wild plant productivity, environmental deterioration, and/or social stresses. This paper examines the effects of sample sizes on diversity values used to establish the trend for diversification. It concludes that sample size effects explain this apparent trend. (3)

Leone, Mark P. (Maryland, College Park)**Symbolic and Structural Archaeology.**

Archaeologists have attempted to understand meaning in the past and of the past with renewed interest, new ideas, and significant hypotheses in the last five to seven years. A description of several schools of archaeological thought which attempt to reconstruct cognition, structure, symbolic effectiveness, or ideology from archaeological societies will be given. The differing assumptions of each school will be illustrated with key examples of how the archaeological record has been interpreted. There will be discussion of the tie to established archaeological theory. Attention also will be paid to efforts that see archaeological interpretations critically or self-reflectively. (14)

Lensink, Stephen C. (Iowa)**A Quantitative Model of Central-Place Foraging.**

A subsistence model is proposed for mobile hunter-gatherers which determines the decisions necessary to forage optimally in an environment where resources exhibit a patchy distribution. Foragers are assumed to minimize the total time spent in subsistence activities while constrained with respect to excursion durations, load capacities and nutritional requirements. The model predicts: (1) patches exploited, (2) patch resource allocation and foraging time, (3) itineraries, and (4) basecamp relocation frequency. Numerical solutions for prehistoric foragers in the Prairie Lakes region of North America are obtained using nonlinear mathematical programming and network analysis. (47)

Leventhal, Richard M. (SUNY, Albany)**Patio Clustering within the Copan Valley.**

Households and patio groups have clearly been identified throughout the Copan settlement area. However, these patio groups appear to be grouped into larger units which allow us to begin to focus upon the possible familial, social, and economic connections which may be evident within Copan society. These clusters will be identified spatially and will then be examined for their possible functional and organizational interpretations. Differences in the patio clustering and spatial arrangements between the central Copan area and the outlying valley areas will be identified. (1)

Levy, Janet E. (North Carolina)**Survey and Settlement Pattern in Prehistoric Scandinavia.**

Archaeological survey in Scandinavia has relied heavily on national programs of registration of finds. For the Bronze Age, in particular, registration of single finds and burial monuments has provided the major data for investigating settlement patterns and social organization. In the past 20 years, identification and excavation of Bronze Age habitation sites have added to these data, but questions remain about the nature of settlement, the degree and nature of ranking in the society, and the changes in settlement and society. Achievements, problems, and potentials of settlement archaeology in the study of ranked societies of prehistoric Scandinavia are discussed. (15)

Li, Y. (see You, Y.) (47)**Li, Zhuang-Wei (Shanxi, China)****Paleolithic Subsistence Strategies of North China.**

Two lithic traditions were evolved during the Chinese Paleolithic in north China. Lithic assemblages of the first tradition are characterized by long, large, thick (207 × 64 × 45 cm) and heavy (1790 g) duty tool kits. Representative sites are clustered along warm, humid woodlands and grasslands of the central northern plains. Faunal and lithic assemblages both indicate gathering lifeways. Tools of the second tradition are mainly light-duty small scrapers and burins. Better known sites are distributed in the cold and dry grasslands of northeast China and the dry desert steppe in northwest China. Hunting may have been their major subsistence mode. (47)

Lightfoot, Ricky R. (Crow Canyon Center for Southwestern Archaeology)
Pueblo I Social Organization in Southwestern Colorado.

This paper presents a view of prehistoric social organization during the Pueblo I period in southwestern Colorado. The Duckfoot site, in the western portion of the Montezuma Valley, is used as the principal example. Architectural patterns and artifact distribution are examined to determine the degree and nature of intra-site social relationships. These reflect multiple levels of interaction, cooperation, and sharing of space between households in a single site. Data from the Duckfoot site are compared with models of Pueblo I social organization developed by the Dolores Archaeological Program. (3)

Limon, Amie (UNAM), Javier Gonzalez (UNAM) and Judith Zurita (ENAH)
Flotation, Pollen, and Phytoliths: How to Make it Work, an Interdisciplinary Approach.

In most paleoethnobotanical studies, analysis of flotation samples, pollen, and phytoliths have been carried out independently of one another. Here we try to demonstrate that these three approaches can be integrated as a unit, and that each one contributes specific data. Special sampling strategies should be developed, both in the field and in the laboratory, in order to obtain reliable, comparable information. (19)

Limp, W. Fredrick and Sandra Parker (Arkansas Archeological Survey)
Interfacing the Stone: Building a Computerized Archaeological Infra-structure.

When conceptually and operationally integrated into the full range of archaeological research, management, and information processing activities, properly designed computer applications serve as an important infrastructure, increasing coherency and productivity. The infrastructure can substantially increase the additive nature of individualized research. Recent developments in multi-user super-micro computers and powerful DBMS now make such an approach technically feasible. Archaeologically, key factors involve the structure and process of classification, data organization, communication flow, and information sources. The ACCESS system, an operational example of such an approach is discussed. (41)

Lincoln, Thomas R. and A. E. Rogge (Bureau of Reclamation)
Nouveau Riche Archaeology.

Although contract archaeologists now have the bulk of our discipline's funds at their disposal, they seem to be the *declassé* Rodney Dangerfields of the profession—they "don't get no respect." We document the sources and types of complaints that have been leveled at contract archaeology, concluding that poor research is the most serious accusation. Some have argued that cultural resource management (CRM) is not intended to be research. We counterargue that CRM should be the acronym for cultural *research* management and then we explore obstacles to be overcome in managing effective research within a contract framework. The paper introduces a symposium in which contract archaeologists working in central and southern Arizona offer the fruits of their scholarship for critical review and evaluation. (58)

Lindauer, O. (see Zaslow, B.) (43)

Lindly, J. (see Coinman, N.) (52)

Lintz, Christopher (Oklahoma Archeological Survey)
Cultural Responses to Late Prehistoric Climatic Changes on the Southern High Plains of North America.

Intensification of xeric conditions between the 13th and 15th centuries on the southern High Plains adversely impacted the economic base of the indigenous Plains Village adaptations. In response, a series of buffering mechanisms were implemented to alleviate population stress and retain the village pattern. These efforts nevertheless engendered significant changes in the cultural pattern as reflected by a breakdown in social cohesion, shifts in settlement patterns toward lateral tributaries, expansion of trade networks, and the development of raiding behavior. Evidence of these changes are provided by recent research of Antelope Creek phase sites in the Texas panhandle. (45)

Lipe, W. D. (see Robinson, C. K.) (44)

Lipe, William D. (Washington State) and Allen E. Kane (Dolores Archaeological Program)
A General Model of Culture Stability and Change.

A theoretical cultural system model was developed to guide investigation of change in the Dolores Anasazi cultural system, A.D. 600-980. Targeted variables are population, resource supply and cost, social organization, facilities, and technology. Key assumptions are: (1) economic goals are satisficing rather than maximizing and (2) economic decisions follow a least-cost principle. Agricultural inten-

sification and increased social complexity are seen as responses to stress when lower-cost solutions to adaptive or social problems are constrained. Under exploration as a possible alternative is a "power" or "growth" model, which assumes some maximization, and implies that growth is most likely when adaptive stress is low. (44)

Little, Elizabeth A. (Massachusetts, Amherst)
Canoe Travel Times on Inland Waterways in the Northeast.

Explorers' reports of the 17th and 18th centuries give travel times by canoe on waterways in the Northeast. These data show that sites as far apart as Cahokia, Illinois, and proto-Iroquoia lie within the limits of economic canoe transport defined by Robert Drennan in 1984. Origins of archaeological finds from southern Ontario indicate substantial long distance travel or exchange 1000 B.C.-A.D. 400, and again A.D. 1540-1650. Therefore, the paucity of exotic goods in Southern Ontario during the Mississippian florescence (A.D. 900-1400) requires explanation. (46)

Litzinger, W. J. (see Morris, E. A.) (32)

Logan, Brad (Kansas)
Modeling Paleoenvironments and Culture Change in the Lower Kansas River Basin.

Data used to model prehistoric man-land relationships for the study area include: (1) an alluvial fill sequence; (2) mid-19th century GLO maps of pre-settlement prairie-woodland ecotone; (3) discharge, stage, and sediment load data documenting recent fluvial processes; and (4) the archaeological record of regional culture history and settlement location variability. The focus is Stranger Creek, a major tributary of the Kansas River and analog of its effects on prehistoric sites. Both streams have, through later planation, significantly altered the archaeological record in their lower reaches. Inferences about past settlement systems in this region must account for geomorphic dynamics affecting their archaeological manifestations. (32)

Longacre, William A. (Arizona)
Ceramic Ethnoarchaeology: An Overview.

The study of pottery among extant societies by archaeologists began over 100 years ago. There is, however, a 50 year lapse from about 1900 to 1950 that calls for explanation. A return to such research quickened during the 1960's and 1970's. Current ethnoarchaeological projects are assessed in terms of their research and sampling designs and suggestions are presented for improvement. (27)

Lord, Kenneth J. (Chambers Consultants and Planners)
Archaeological Research in Southeastern New Mexico: The WIPP.

Excavations in southeastern New Mexico centering around the Waste Isolation Pilot Project (WIPP), sponsored by the Corps of Engineers (Albuquerque District), have produced valuable information with regard to regional chronological controls. A series of radiocarbon dates from three sites suggest that the projectile point and ceramic chronologies currently used in the region are in error. The presence of brownware ceramics with projectile points which have been assigned to the Late Archaic Hueco phase indicate an overlap in the two major phases represented in the region. This overlap indicates that major revisions in the cultural-temporal sequence in the region are needed. (40)

Lourandos, Harry (New England, Australia)
Hunter as Producer: An Australian Perspective.

The organization of production in Australian aboriginal societies is discussed, drawing upon both ethnographic and archaeological examples. Intensification of resource use and manipulation is shown to be connected with intergroup gatherings and ceremonies. Examples include large-scale artificial drainage systems, and intensive use of cereals, tubers, and cycads. This evidence is viewed from a social perspective and explanation involves tension caused by expansion of competitive social networks and perhaps trends towards social differentiation. Comparisons are made with Melanesian horticulturalists, indicating the operation of broadly similar socioeconomic processes. (49)

Luedtke, Barbara E. (Massachusetts)
Regional Variation in Massachusetts Ceramics.

Prehistoric ceramics from Massachusetts have proven resistant to typology, perhaps because of a good deal of local variation in the associations of technological and stylistic attributes. In order to test this hypothesis, assemblages from sites on the Boston Harbor Islands and Nantucket are compared with an assemblage from the Merrimack River Valley in which strong associations between certain key attributes have been defined. Each assemblage includes a full spectrum of Middle and Late Woodland styles, and together they provide a cross-section of the Massachusetts coastal zone. Social and economic implications of the findings are discussed. (5)

Lukermann, Fred E. and Jennifer Moody (Minnesota)**Archaeology: The Identification and Exploration of Probable Worlds.**

Archaeologists interested in cultural processes have for the most part confined their analyses to two levels: (1) the artifactually descriptive and (2) the causally explanatory. We believe that such approaches are incomplete and that a further behavioral analysis must be undertaken on the experiential level. This phase involves the recreation of probable worlds. The philosophical argument behind the proposal will be presented, as well as a method. Examples will be drawn from the Old and New Worlds. (2)

Luning, Jens (Frankfort, Germany)**Survey and Total Excavation.**

During the last 20 years there have been some major projects in West Germany aiming at total excavation of whole settlements (e.g. Feddersen Wierde, Flogeln, Oberschwaben-Bodensee, Aldenhover Platte). There is now a growing tendency to concentrate on small regions (Siedlungskammern). A combination of planned and rescue excavations in the Rhineland has given good opportunities for this type of research. Following different levels from house to settlement to region new insights have been gained into the development from the early to the late Neolithic period. (15)

Lyman, R. Lee (Oregon State)**Paleoecological Interpretations of Archaeologically Rare Taxa in the Holocene of Eastern Washington.**

Frequencies of ursid remains in eastern Washington during the last 7000 years fluctuate in manners suggestive of a Middle Holocene climatic interval marked by winters that were shorter and/or more mild than during Late Holocene. The presence of arctic fox and columbian ground squirrel bones in Early Holocene sediments suggest this time period was climatically characterized by summers that were approximately 1-2°C cooler and/or which received 20 cm annual precipitation more than at present. (7)

Lynch, T. F. (31)**Lynch, T. F. (42)****Macdonald, W. K. (see Price, B. J.) (49)****Macdonald, William K. (Columbia)****Some Implications of Tattooing in Northern Luzon, Philippines, when the Probability of Archaeological Recovery Is Effectively Zero.**

A large collection of ethnohistoric photographs covering the period ca. 1900-1920 in the Philippines, housed at the University of Michigan, is examined in terms of the "social interaction" model of style. In particular, the expectation that units of stylistic similarity among tattoos correspond to units of warfare is examined and areas of correspondence and non-correspondence discussed. Constraints on stylistic durability and stylistic "control" are suggested. (16)

Madsen, J. H. (see Fish, P. R.) (43)**Madsen, J. H. (see Fish, S. K.) (50)****Mainfort, Robert C. (Tennessee Division of Archaeology)****Pinson Mounds: Internal Chronology and External Relationships.**

The Pinson Mounds Site (40MD1) consists of at least 12 mounds, a geometric embankment, and associated short-term habitation areas. Recent research has conclusively demonstrated that the entire mound complex, which includes 5 large platform mounds, dates to the Middle Woodland Period. The platform mounds were apparently built between A.D. 100-200 and the site ceased to function as a regional ceremonial center around A.D. 300. Relationships between Pinson Mounds and other Middle Woodland platform mound sites in the mid-south are discussed. (34)

Mallory, John K. (UCSC)**Models of the Political Economy of Late Classic Copan.**

Many years of research at Copan clearly demonstrate a lack of any significant level of economic specialization. The small proportion of people, and low levels of energy involved in specialized production indicate its lack of systemic importance in terms of urbanism, market development, and the maintenance of political dominance. These conclusions may be applicable to other Maya polities. Several models are presented which elucidate the relationships between low levels of economic specialization and the Maya political economy generally. (1)

Malpass, Michael A. (Durham, North Carolina)**Late Prehistoric Agricultural Terracing in the Colca Valley, Peru: Preliminary Report.**

The Colca Valley contains some of the most extensive and well preserved agricultural terraces in the New World, yet little is known concerning their age or the reasons for their construction or abandonment. Excavations have suggested that the terraces are post-Middle Horizon, yet many appear to be pre-Incaic. Preliminary survey results suggest the highest terraces are oldest, with those nearest the river being the most recent. At least two phases of terrace construction have been identified. Climatic change, autochthonous cultural processes and foreign domination will be discussed as possible causes for the developments noted. (28)

Mandel, Rolfe D. and Alan H. Simmons (Kansas)**Geomorphology and Archaeology of the Western Desert of Egypt.**

Recent research near Kharga Oasis in the Western Desert of Egypt documented numerous prehistoric archaeological sites along the edge of the Libyan Plateau and in the Kharga Depression. These sites are commonly associated with playas and former springs. The archaeological record indicates that there were four periods of prehistoric human occupation in the study area: Late Acheulian, Mousterian-Aterian, Terminal Paleolithic, and Neolithic. The geomorphic evidence suggests that the first three periods were separated by hyper-arid climatic episodes at least as dry as the modern climate of the Western Desert. This paper summarizes the results of the investigations. (55)

Maslowski, Robert F. (Corps of Engineers)**Cordage, Knots, and Netting: Technological Approaches to Ethnicity and Cultural Stability.**

Cordage is one of the oldest perishable artifacts recovered from American archaeological sites. The processes and attributes involved in cordage, knot, and net manufacture are described and illustrated with examples from Trans-Pecos Texas and the Ohio Valley. The distribution of cordage attributes suggest that cordage manufacture represents a highly standardized motor habit. The construction of netting, however, involves greater variability and several levels of decision making which make it more amenable to stylistic analysis. Attributes involved in cordage and net manufacture rank low on the hierarchical scale of artifact styles but are still useful in delineating prehistoric and ethnographic cultural boundaries. (16)

Marcos, Jorge G. (Politecnica Litoral, Ecuador)**Instruments of Production in the Early Farmers Household: A Review of the Archaeological Evidence from Coastal Ecuador.**

This paper addresses itself to the implications of farming tools found in Valdivia house floors and at earlier non-ceramic sites in coastal Ecuador. It defines as instruments of production not only those directly involved in planting and cropping, but also in plant food preparation and storage. Discussion is also given to the differential preservation of plant remains at various sites as a variable that must be considered if meaningful inferences are to be made about agricultural production based on non-perishable data. (48)

Marks, Anthony E., and Douglas Connor (Southern Methodist)**The Nile Valley at the End of the Paleolithic.**

This paper examines the effects of climatic change on the inhabitants of the Nile Valley between 12,000 and 6,000 B.P., with emphasis upon the Pleistocene/Holocene boundary. It will consider those environmental factors most affected by local and regional climatic change and how the local inhabitants adapted to them. The Nile Valley north of the Third Cataract will be examined for elements which show consistency, those which exhibit variability, and those which change through time. A model will be presented to account for the evidence for markedly episodic human presence in the Nile Valley during this period. (52)

Marmaduke, William S. (Northland Research, Inc.)**A Regional Approach to Middle Gila Basin Prehistory.**

Surveys undertaken by Northland Research Inc., for the Central Arizona Project over the last several years have been sufficiently broad areally to suggest an unappreciated structure to the distribution of archaeological remains in the Middle Gila River Basin. With one exception, these surveys have sampled areas that traditionally have been regarded as somewhat marginal to the "rich" zones of prehistoric occupation. Yet, in nearly every case, a large inventory of sites has been recorded. If we regard these results as representative, then the conventional models of southwestern archaeology are inadequate to account for them, and new models are required. (58)

Marquardt, W. (53)**Martin, Dan and Mike Garratt (Bureau of Land Management)****The Utility of MOSS to Cultural Resource Management.**

The Map Overlay and Statistical System (MOSS) is the accepted standard for the U.S. Department of Interior Geographic Information System (GIS) software. This GIS software is ready for extensive

application in Cultural Resource Management (CRM). MOSS offers many advantages to CRM such as locational data retrieval, display, and most importantly, analysis. For multiple environmental variables, MOSS can calculate descriptive statistics and perform comparisons. Various archeological situations and how MOSS resolves problems are presented. The Bureau's extensive multiple resource data base from the Piceance Basin (Colorado) illustrates the system. (6)

Massoia, E. (see Baied, C.) (46)

Matheny, R. T. (10)

Matos, R. M. (10)

Mattfield, Frederic R. (APTech)

Techniques for Observation and Photography of Microartifacts

Even with relatively simple illumination, the conventional stereomicroscope is well suited to observation of microartifacts, and its three-dimensional image is valuable in identification. However, the size range dealt with (1mm and smaller) presents difficulties for photographic recording, lying on the border between photomacrographic and photomicrographic techniques; and of course stereophotography is not widely used in publication and presentation. Photomacrographic techniques are reviewed as they apply to microartifacts in particular, and certain photomicrographic illumination techniques are presented as possible surrogates for three-dimensional viewing. (8)

Matthews, M. H. (see Neusius, S. W.) (44)

Matthews, Meredith H. (Dolores Archaeological Program) and Timothy A. Kohler (Washington State)

Change in Prehistoric Wood Resource Use: Evaluation of Two Procurement Strategy Models.

Macrobotanical data from the Dolores Archaeological Program (Dolores, Colorado) indicate change in wood resource use from A.D. 650-920. Change in wood resource use for construction and fuel is compared with two possible procurement strategy models. One model is directed by cultural selection of resources but constrained by population growth and climatic stress. The second model is one of expedient procurement, structured by settlement location. Results of the comparison have direct implications for modeling exploitation patterns of the Dolores River Valley Anasazi. (19)

Matthiesen, Diana G. (Florida)

Preceramic Animal Utilization on the North Coast of Peru.

The Archaic Period animal subsistence economy of the North Coast of Peru is characterized by a near total dependence on the marine environment. Land animals are rare to absent, as are weapons with which to hunt them, in marked contrast to the earlier nomadic hunters. The faunal remains from Huaca Prieta are the most thoroughly studied to date and represent molluscs, crabs, sea urchins, fish, cetaceans, pinnipeds, and a variety of marine and shore birds. (42)

Mauldin, Raymond P. (Texas, Austin)

Resource Acquisition and Mobility Strategies in Settlement Modeling.

The concept of site function, widely used in settlement systems analysis, has seldom been effectively operationalized. Definitions which lack linking arguments are employed to classify sites, resulting in models which are not testable. This paper argues that a testable settlement typology must stress organizational aspects of cultural systems. Site placement and activities conducted are a function of the resource acquisition and mobility strategies which are dependent on the overall adaptation and environmental variability. Utilizing modern environmental data, a settlement model for the Pueblo period in west Texas is developed and initial tests performed. (3)

May, J. Alan (American Museum of Natural History)

Recent Advances in Remote Sensing: The Use of Ground Penetrating Radar on a Contact Period Coastal Shellmidden.

Ground penetrating radar and proton magnetometry are used in a complementary manner to study spatial patterning within a Contact Period shellmidden. The results presented are applied to: (1) facilitate decision making for excavation unit placement by delimiting anomalies, (2) quantitatively define activity area boundaries, and (3) compare anomaly signatures with those of an historic mission to identify structural differences. Ground penetrating radar and a soil probe are employed to refine site limits and estimate feature content and thickness. Examples of the application of remote sensing techniques to condition and refine excavation strategy are provided from recent research on a coastal Georgia shellmidden. (12)

Mayer, Susan N. (New York)

Ceramics at Fort Ninigret, Charlestown, Rhode Island.

Analysis of the ceramics recovered from test excavations conducted at Fort Ninigret was carried out within the framework set forth by Carlyle S. Smith. Although the small amount of pottery recovered was unexpected, Woodland and Contact period occupations at the site could be defined. The surprisingly small size of the ceramic sample associated with the main, 17th century, occupation of the site, as well as the small number of other artifacts associated with women's activities seems to indicate that few if any women used this seasonally occupied site. (5)

McAnany, Patricia A. (New Mexico)

The Effect of Chultuns on Household Configurations and Settlement Patterns at Sayil, Yucatan.

An absence of surface water in the dry Puuc Hills of Yucatan, necessitated the construction of artificial water cisterns (chultuns). Utilizing recent data from Sayil, these domestic facilities are characterized by location, density, and correlation with structure types. Geological and architectural factors affecting chultun construction are discussed in terms of their influence on the size of the residential unit and on community settlement patterns. It is proposed that these vital facilities may have structured residential patterns by encouraging planned construction and discouraging accretional growth. (39)

McBrearty, Sally (Illinois, Urbana)

Paleoenvironmental Implications of Research at the Site of Simbi, Western Kenya.

The Sangoan Industrial Complex is known primarily from samples from questionable archaeological context. Because of the geographic distribution of Sangoan finds in Equatorial Africa, the industry has been believed to be an adaptation to a forested or woodland environment. Recent research indicates an arid or semiarid grassland environment for Sangoan sites from which we have data. At the site of Simbi in western Kenya, the presence of large and medium herbivore fossils precludes a closed woodland habitat at the time of the Sangoan habitation. (56)

McCartney, Peter H. (Calgary)

Alternative Hunting Strategies in Plains PaleoIndian Adaptations.

Most of the evidence used for reconstructing PaleoIndian bison procurement comes from sites where large numbers of animals were collectively driven during late fall or early winter. The importance of smaller kills involving different hunting methods is considered on two levels: (1) variability in PaleoIndian hunting methods is assessed in terms of certain observed characteristics of bison kill sites and (2) an interpretive framework is sought in a discussion of variables in bison and human ecology that may influence the selection of specific hunting strategies. (35)

McCoy, Patrick C. (Bishop Museum)

Biogeoclimatic Factors of Production in a Hawaiian Alpine Desert Adze Quarry.

The organizational structure of a Hawaiian adze quarry located between the 8900 and 13,000 ft. elevations on the south flank of Mauna Kea, in a periglacial alpine desert environment, is described in terms of biogeoclimatic factors of production, including subsistence. Bioclimatic constraints are isolated as the primary determinant factors in the scheduling and duration of work for which there is reasonably good archaeological evidence. Spatio-temporal dimensions of activity pattern variability, including procurement and reduction strategies, are explained in terms of geological factors, such as the differential distribution and variable form of the raw material. (8)

McGhee, Robert (National Museum of Man, Ottawa)

Current Problems in Canadian Arctic Prehistory.

The study of Canadian Arctic prehistory is characterized by a dominant interest in culture historical problems, and by a relatively simple taxonomic framework of two major traditions, each comprised of two temporally sequential cultures. Current problems center on the nature of the population expansions which brought these traditions to the region, the nature of contact between the two traditions, and the extent of contact with adjacent peoples, including the prehistoric occupants of Alaska, northern forest groups, and the Greenland Norse. (22)

McGuire, R. H. (see Hathaway, J. H.) (40)

McGuire, Randall H. (SUNY, Binghamton)

The Muddle Over Modes of Production in Archaeological Analysis.

Archaeologists tend to misuse the concept of modes of production in their analysis of non-stratified societies. They have confused evolutionary stages, technological processes and societal types with modes of production. This muddle is not at all surprising given the ambiguities in Marx's initial discussions of the concept, the changing meaning of the concept in the development of modern

Marxist theory and the current theoretical debates surrounding the concept. This paper examines contemporary modes of production analysis with an emphasis on the French anthropologists and their most recent interpreters. Such examination lays a foundation for an informed and critical use of modes of production analysis in archaeology. (49)

McQuestion, K. S. (see Baker, T. S.) (45)

McVicker, Donald (North Central)

The Transition from Archaeological Explorations to Archaeological Research: Frederick Starr in Mexico, 1894-1904.

American museums and universities sponsored their first scientific expeditions to Latin America at the turn of the century. Starr's papers are used to investigate why this critical period of transition has been neglected. These data indicate that the orientation of American archaeologists run counter to the principles of Boasian anthropology, and that their imperialist attitudes toward cultural property led later scholars to ignore their contributions. As a result, the scientific value of their museum collections remains largely unknown. (28)

Meltzer, D. J. (14)

Metcalf, Duncan and Kevin T. Jones (Utah)

Recalculating Binford: Simple Methods for Calculating Animal Body Part Utility Indices.

Lewis Binford pioneered the development of quantitative animal body part utility indices for modeling hunting behavior and its archaeological consequences. The goals of this work are indisputably important, but Binford's derivation of the utility indices is unnecessarily complex, making interpretation difficult and potentially stifling incentive to continue this line of research. Using optimal foraging theory as a guide in identifying important variables, we have simplified the derivation of major indices without loss of precision. Our equations require fewer assumptions and data, and produce a better fit with Binford's observational data than the original indices. (7)

Michaels, George H. (Texas Ae/M)

The Early Postclassic at Colha, Belize: A Summary Overview and Directions for Future Research.

This paper presents an overview of what is currently known about the Early Postclassic settlement at the Maya site of Colha, Belize. Although field work in the past few years has concentrated on the Preclassic and Classic period occupations at the site, sufficient data pertinent to the Early Postclassic settlement is now available for analysis. These data reveal significantly different patterns in subsistence strategies, specific technologies and settlement pattern from the previous periods. Furthermore, these patterns also demonstrate internal variation within the Early Postclassic period. (54)

Miksicek, Charles H. (Arizona)

A Common Sense Approach to Multivariate Statistics in Paleoethnobotany.

Paleoethnobotanists commonly work with multiple variables from a variety of features, sites, or time periods. It is surprising that there have been very few applications of multivariate statistical analyses to paleoethnobotanical data. What types of data are most appropriate for multivariate analysis? What are the basic assumptions behind these tests? How are the results most easily interpreted and presented? Examples will be derived from recent work in southern Arizona. While multivariate tests should not be considered an end in themselves, they can be very useful tools for pattern recognition and exploratory data analysis. (53)

Miller, Mark E. (Wyoming)

Manufacturing Technology of Hell Gap Projectile Points at the Seminoe Beach Site in Wyoming.

Surface finds of flaked, quartzite river cobbles, biface fragments, Hell Gap projectile points and debitage at the Seminoe Beach site in the Hanna Basin of south-central Wyoming are regarded as evidence of projectile point production. The assemblage is described and compared to existing models of the manufacturing sequence of Hell Gap projectile points. Although test excavations have not recovered any artifacts in place, this assemblage adds to our understanding of a little known aspect of PaleoIndian lithic technology. Continuing investigations at the site are directed toward establishing the stratigraphic context of the Hell Gap component. (8)

Miller, Naomi F. (Washington, St. Louis)

The Use of Ratios in Paleoethnobotany.

Ratios serve several purposes in paleoethnobotanical analysis. First, they may be used to standardize the measurement of quantities of plant remains from different loci of sites. In this case, the appropriate variable for the denominator depends on the investigator's research question. Second, expressed as a proportion, ratios are used to compare similar categories of plant material. Here, it is important to

specify the way in which two categories are comparable. Third, ratios may be used to quantify taxonomic and other differences between plants. Examples from published reports and recent research in Iran will be given. (53)

Mills, Barbara J. (New Mexico)

"North American Cooking Pots" Reconsidered: Some Behavioral Implications of Variation in Cooking Pot Morphology.

In 1944 Ralph Linton discussed several interesting behavioral implications of variation in the size and shape of North American cooking pots. Recent archaeological interest in ceramic vessel function has not lessened the importance of Linton's article and, in fact, has shown a need for additional research on this topic. Using cross-cultural ethnographic data, this paper reconsiders some of Linton's conclusions and suggests additional important sources of intergroup variation in cooking vessel form, such as mobility, dietary mix, food package size, and household size. (27)

Mills, Nigel (Southampton, England)

Survey In the Mediterranean Zone: Theory and Practice.

Existing archaeological data bases in many parts of Europe are heavily biased toward particular types of evidence and landscape. Adequate information concerning the distribution and development of agrarian settlement and land-use systems is especially scarce. Recent field surveys in the Mediterranean area organized at the regional scale have begun to redress these biases and to produce important new data on long term settlement and population dynamics. This paper considers the design of these surveys at the regional scale, methods and problems of data collection, and results and interpretation. Particular reference is made to regional survey and geomorphological analysis in southern France and the implications for understanding farming societies in the area during the 3rd millennium B.C. (15)

Milner, George R. (Kentucky)

Mississippian Period Cultural and Demographic Transformations in the Cahokia Area of West-Central Illinois.

West-central Illinois supported one of the most organizationally complex cultures to exist in prehistoric North America. During the Mississippian period, which spanned 400 years and encompassed four archaeologically recognizable phases, the Cahokia-area cultural system developed, flourished, and collapsed. Recent investigations have established the direction of population change during this period and the nature of alterations in cemetery characteristics, both of which provide information on the sequence of events that accompanied the eventual dissolution of a highly developed cultural system. These results are summarized and evaluated using newly collected data employed as a gross measure of long distance social interaction—variation over time in the amount of exotic materials in artifact assemblages derived from recently excavated, well-dated sites. (33)

Minnis, Paul E. (Oklahoma)

Basic Interpretive Requirements of Prehistoric Ethnobotany.

Prehistoric ethnobotany must develop interpretive protocols. Ethno-botanists must use as many botanical data sets as possible and not concentrate on one artifact set (e.g. seeds). As plant/people interactions are ecological, change in one interaction may create other changes. The analysis of many data sets increases the probability of detecting a range of interactions. As ethnobotanists do not adequately understand the factors affecting patterning in ethnobotanical assemblages, analyses should concentrate on the interpretation of changes in like categories. Sophisticated quantitative analyses can be more sensitive than our interpretive sensitivity, thus yielding unverifiable patterning. (53)

Misner, Elizabeth J. and Marsha Chance (Florida)

Intersite Variability of an Archaic Lithic Procurement Site in Central Florida.

The distribution of stone tools and tool production are compared for a Florida Archaic site. Tool production does not appear to have been large scale and factory-like. Instead, small specialized areas of production are present. Additionally, there are areas of tool use not related to production. These include nondiagnostic expedient tools that reflect specialized activities carried out near plentiful raw material. Initial reduction as well as auxiliary tool production and use were conducted near the raw material source. Secondary reduction was not confined to workshop loci but was mixed with late-stage finishing areas and activity stations. (40)

Mixon, Benjamin L. (Arizona Archaeological Society)

Pit-houses of the Hohokam Classic Period.

This paper examines the existence of pit-houses in the Classic Period of the Hohokam. Included is the definition of a pit-house as compared to a house in a pit and the major features of these pit-houses, along with the distribution thus far known in the whole of the Hohokam area. Other evidence of the

Classic Period association includes archaeomagnetic dates, ceramics, superposition and similarities with other classic period architecture. The impact on current thinking related to the Hohokam social structure is also examined. (43)

Mock, S. (see Valdez, F.) (54)

Montet-White, Anta (Kansas)

Variability in Central European Gravettian Settlements.

Results of the excavations at Kamegg, Lower Austria, are presented in the framework of a settlement study of the Central European Gravettian (28,000-14,000). Settlements of that period are open air sites that exhibit a considerable degree of variability: stable camps with several dwellings and large quantities and varieties of artifacts; seasonal camps with habitation structures lower density of artifacts and more limited range of artifact types, hunting camps with hearths and low artifact counts, and specialized camps, like Kamegg, where the manufacture of bone tools was the predominant activity. The Gravettian corresponds to the later stages of the last Glacial when major changes affected the climate and environment of the Central European Plain. Settlement variability is examined in relation to climatic changes in an effort to understand the impact of the last major glacial advance on the human population. (56)

Moody, J. (see Lukermann, F. E.) (2)

Moore, J. (see Green, S. W.) (15)

Moore, Katherine M. (Michigan)

Hunting and Herding Economies on the Junin Puna: Recent Paleoethnozoological Research.

The early economies of the Junin high altitude grassland, or *puna*, are known primarily from a series of stratified rockshelter deposits. Faunal remains from Pre-ceramic and Formative components indicate fundamental shifts in subsistence practices and cultural attitudes toward animals during the 4th millennium B. C. Two measures of hunter selectivity (ratio of cervid to camelid remains, and age specific mortality curves of prey animals) document these changes repeatedly with significant variation within a local area. Data from Telarmachay and Panaulaica permit finegrained analysis of the changes in animal morphology and demography that accompanied this process of domestication. (42)

Moore, Roger A. (Division of Conservation Archeology)

Archaic Projectile Point Typology: Chronology in the Four Corners Area.

Metric and morphological data generated from the analysis of several hundred Archaic projectile points from the Four Corners region of the Southwest were examined. The goals of this project were to develop an objective means of defining Archaic point types and to determine if some variation in defined point types is temporal or spatial. The statistical means of defining Archaic projectile point types, especially within the Oshara Tradition, is presented. (38)

Moratto, Michael J. (INFOTEC Research, Inc.)

Federal Involvement in California Archaeology, 1945-1985.

Partly because Federal agencies own or control vast areas in California, and partly as a result of legislative changes, the Federal Government has greatly influenced the direction, intensity, and quality of archaeology in this state. Positive trends since 1945 evidence increasingly thorough surveys, better inventories of cultural resources, improved management of these resources, a diminished rate of site destruction, the emergence of phased (testing/data recovery) excavations, more support for large-scale/multidisciplinary research, greater attention to historical archaeology, and more participation by Native Americans in archaeological work. Negative developments have also occurred, but overall the influence of the Federal Government has been highly beneficial to the growth of professional archaeology and to the protection of archaeological resources in California. (18)

Morenon, E. Pierre (Rhode Island)

Rhode Island Potsherds: High Tech Studies of Tiny and Worn Fragments.

Studies of prehistoric pottery in Rhode Island have been limited to the analysis of small numbers of tiny fragments which are typically abraded. This has made it difficult to characterize ceramic assemblages and interpret them. Moreover, comparisons between pottery sequences in Rhode Island and other regions are nearly impossible. Recent results from CTSCAN and TL dates are used to illustrate a solution to several of these problems. The application of "high tech" methods may also result in standardized descriptions of ceramic assemblages, an essential step if ceramic data are to be used to solve problems which extend beyond state borders. (5)

Morris, Elizabeth Ann (Colorado State) and William J. Litzinger (Ethnobiology Research Laboratory)
Analysis of Floor Samples from a Hogback Phase, Early Ceramic Period, House at the Kinney Springs Site (5LR144c), North-central Colorado.

Floor material from a stone walled oval structure was sampled in 25 × 25 × 5 cm units. A radiocarbon date from the floor is 950 ± 60 B.P. (Beta 10196). A second date from a hearth 15 cm under the floor is 1120 ± 60 B.P. (Beta 10195). Other dates in association with Hogback phase material are 1510 ± 70 B.P. (Beta 7328) and 1650 ± 70 B.P. (Beta 7329). The Hogback phase is characterized by cord-marked ceramics and small triangular corner-notched projectile points. Besides artifacts and charcoal, water separation analysis provided evidence on the non-random distribution of tiny lithics, bone fragments and seeds. Preliminary distributional interpretation permits formulation of intramural activity hypotheses. (32)

Moss, Emily H. (Institute of Archaeology, London)

Uses of Functional Analysis to Answer ARchaeological Questions: Paleolithic Europe, 12,500-9000 B.P.

Functional analysis, or microwear analysis, employing polish identification has far broader and more significant applicability than is generally known. Sample selection which is aimed toward answering archaeological questions provides a whole new framework for approaching lithic material. The examples, taken from four final Paleolithic sites in western Europe, center on the questions of hearth use, spatial distribution and chronology of activities on a site, temporal change in functional factors, cultural variability and seasonality. Inter-site comparisons are possible at some levels. (57)

Mountjoy, Joseph B. (North Carolina)

West Mexican Stone Stelae from Jalisco and Nayarit.

Although the erection of stone stelae is a major feature of heartland Mesoamerican culture from Middle Formative times through the Classic, the penetration of this trait into western Mesoamerica is generally believed to have reached no farther than southern Michoacan, at the end of the Classic. However, recent investigations by the author have resulted in the discovery of 17 stela-like stones—four with pecked designs—at nine sites in Jalisco and Nayarit. Evidence is presented that these stones are stelae, that they relate to sun god cult rituals, and that they may all date to the Postclassic. Some cultural implications of this belated peripheral development are discussed. (28)

Moya, Anders (UMARP) and Christine A. Hastorf (Minnesota)

The Effect of Inka Economics on Northern Wanka Agricultural Production in the Central Peruvian Andes.

Recent archaeological research in the central Andes has focused on food production and crop distribution among the northern Wanka before and after the Inka conquest. Preceding Inka domination, Wanka agriculture was intensive and oriented toward those crops that were most productive within a settlement's immediate catchment. Certain special crops (maize and coca) were concentrated in elite households. Following Inka conquest, settlements relocated to lower elevations and agricultural production apparently came to focus on maize, a crop highly desired by the state staple finance system. Agriculture as a tie between the household economy and state economy is discussed. (10)

Mulholland, Mitchell T. (Massachusetts)

Mid-Holocene Population Change in Southern New England: A Geographic Information System Approach.

Human responses to environmental change throughout the Middle Holocene are evaluated using a Geographic Information System. Comparisons of site distributions with paleoclimatic, geological, and environmental data suggest that environmental change had a major effect on human populations. Two episodes of mast (nut tree) pollen decline occurred during the 7th and 6th millennia B.P. and after the 4th. Both episodes correlate with a decline in prehistoric site frequency, as does a colder climate 2,000 years ago. A decline in hemlock pollen 4,500 years ago, accompanied by peaks in oak and other mast pollens, corresponds with the highest frequency of archaeological sites in prehistory. (6)

Muller, Jon (Southern Illinois, Carbondale)

Mississippian Art and Specialization.

New evidence on Mississippian production throws doubt on the concept of specialist artisans. Diversity and exchange of Mississippian "art" products are examined from a stylistic perspective in order to assess the degree of specialization and transformation of wealth. The internal and external roles of the artist are assessed from evidence on the manufacture and distribution of "valuables." Artistic production systems are compared to those of utilitarian objects of exchange. Artisan skill in some materials was very high, but it is unclear that this can be taken as an indication of full-time or "craft" specialization. Special emphasis will be placed on the nature of shell art object production.

Evidence shows that production of finished objects in this medium took place throughout the South-east. Yet, regional styles show a varying pattern of distribution through time that do not seem to be linked to cycles of raw material production in the coastal source areas. (23)

Munson, C. (see Brose, D.) (25)

Munson, Cheryl (Indiana)

Regional Conference Results from the Midwest.

This paper will consider the status of the Midwest Regional data base; standards and guidelines for conduct of cultural resource management in a regional context; and interaction of regional planning with state and federal regulations and the State Plan process. (25)

Muse, Michael C. (Politecnica Litoral, Ecuador)

Observation, Elaboration, and Purpose of Household Contextual Data at Penon del Rio: Technique, Method, Theory.

Recovery techniques for archaeological habitation context at this deep, stratified local center with the Penon del Rio raised field complex, are reviewed for three time periods spanning 2500 years of occupation at the site. Designed for the tropical lowland, floodplain (Guayas basin) environment, these techniques and the methodological framework established specific limits for archaeological inference at all subsequent steps of the investigation process. Methods and descriptive/classificatory criteria employed at the level of integration and data analysis are illustrated. Finally, a holistic concept of production (as opposed to the currently widespread technological or strictly economic idea) provides the basis by which these data can be used to infer social transformation processes. (48)

Nagao, Debra, (Columbia)

Epiclassic Interaction: Eclecticism and Exchange of Cacaxtla and Xochicalco.

The aim of this presentation is to reassess the nature of foreign interaction and influences, especially Maya, at the Epiclassic Central Highland sites of Cacaxtla and Xochicalco. A consideration of the foreign ties seen in the style and iconography of the monumental arts (architecture, sculpture, mural painting) will be compared with evidence for "outside influence" manifested by more portable items of trade at these two sites. Implications for divergent patterns of interaction evidenced by archaeological and artistic materials will be discussed. (20)

Nance, Jack D. (Simon Fraser)

Reliability, Validity, and Quantitative Methods in Archaeology.

Over the last three decades quantitative methods have become increasingly prevalent in archaeology. Archaeologists now employ descriptive and inferential statistics, seriation methods, multivariate statistics and a host of other computer-assisted procedures that require quantitative data. Yet, few archaeologists have undertaken examination of the reliability of their quantitative observations, or the validity of the variables they routinely measure. This paper provides definitions of reliability and validity, discusses some methods for measuring reliability and validity statistically, and discusses the relevance of these concepts for modern archaeology. (9)

Navarette, M. (see Siemens, A. H.) (28)

Neitzel, J. (see Rice, G. E.) (58)

Neitzel, Jill (Smithsonian)

Regional Styles and Organizational Hierarchies: The View from Chaco Canyon.

Interaction within hierarchically organized sociopolitical systems is considered in terms of its impact on regional stylistic patterning. In pre-state sedentary societies, multiple styles which overlap spatially to varying degrees can be expected. Such patterning is present in the complex regional system which was centered around Chaco Canyon in the northern Southwest. The distributions of several ceramic design styles are documented in order to examine the kinds of horizontal and vertical relationships which existed at different spatial scales. (23)

Netherly, Patricia J. (Dumbarton Oaks @ Massachusetts) and Tom D. Dillehay (Kentucky @ Universidad Austral de Chile)

Domestic and Public Contexts at the Cementerio de Nancho Site: Defining Preceramic Public and Domestic Production.

The 7000 year old Cementerio de Nancho site is located in northern Peru in a tributary valley of the Zana River, the Nancho Quebrada. It consists of two rudimentary platform mounds, presumably religious in function, which are separated from an area of habitation and production by a gully with seasonal discharge. In the latter area, spatial distribution, residues present and the artifacts employed are used to define domestic and non-domestic production areas. The early date of this site and the

presence of recognizable platform mounds together with an extensive habitation and work area make these data of particular interest. (48)

Neumann, Thomas W. (Syracuse)

Late Archaic—Middle Woodland Occupations In Southeastern Minnesota.

Based upon research since 1981, the conception of the Root River drainage in southeastern Minnesota as marginal to Upper Midwestern prehistory is rejected. Point styles are identical to those found throughout the eastern United States, while the only sites containing mica in the region are found there as well. The presence of Knife River chalcidony and Hixton "quartzite" are evidence for extensive regional interactions. Usewear analysis showing that most points served as knives for hide working suggest that a seasonal band organization analogous to that found on the Canadian Shield might be more appropriate than the previous idea of male-dominated hunting camps. (33)

Neusius, P. D. (see Phagan, C. J.) (44)

Neusius, Sara W. (Southern Illinois, Carbondale) and Meredith H. Matthews (Dolores Archaeological Program).

Resource Mix: Changes in the Relative Importance of Plant and Animal Foods of the Dolores Anasazi.

The interaction of population, climate, and settlement location leads to predictions of change in the procurement and use of plant and animal resources by the Dolores Anasazi from A.D. 600-980. Specific expectations are generated for the relative importance of agricultural production, wild plant food gathering, and game procurement. Archaeological measures of resource mix are used to evaluate these expectations, and the results reflect on the strengths and weaknesses of the predictive model. (44)

Nials, F. L. (Eastern New Mexico)

Geological Evaluation of Archaic Sites Located in Aeolian Depositional Environments.

Difficulties posed by sites in aeolian deposits are compounded when such sites contain either non-diagnostic or "curated" artifacts, as is typical of many southwestern Archaic lithic scatters. For many of these sites, however, geomorphic context and soil stratigraphy can be used to approximately date lithic sites, evaluate site integrity, identify "curated" artifacts, and plan excavation. This paper reviews results of geologic studies of Archaic sites in New Mexico and discusses potential problems of interpretations. (38)

Nichols, Debrah L. and Shirley Powell (Southern Illinois, Carbondale)

Demographic Reconstructions in the American Southwest: The Relationship Between Expectations and Data.

Demographic reconstructions for the prehistoric American Southwest are frequently based on an implicit assumption of high population density. This, in turn, leads to interpretations of archaeological remains that support the original expectation. An alternative expectation, low population density, leads to different interpretations of the same archaeological remains. Data from Black Mesa, northern Arizona, are used to illustrate this pattern, and implications for models of Anasazi sociopolitical evolution are considered. (3)

Niemczycki, Mary Ann (Rochester Museum @ Science Center/SUNY, Brockport)

The Genesee Connection: Iroquois Origins in Western New York.

Attempts to identify transitional Owasco-Iroquois sites in the Genesee Valley have relied on inadequate diagnostic criteria. A reanalysis of ceramic patterns in the Genesee reveals that the local ceramic sequence reflects patterns of cultural contact and development which are unique to western New York. A regional cultural sequence based on local ceramic data provides evidence for a transitional phase which begins with a sudden influx of Ontario Iroquois traits ca. A.D. 1200-1250. The date of this Ontario Iroquois connection prompts a reexamination of current assumptions regarding Iroquois origins and a redefinition of in situ development in western New York. (5)

Norconk, Marilyn (UCLA)

A Functional Interpretation of Cranial Deformation from the Andes.

Bending of the malleable bones of an infant results in an altered skull in adult life. Although 30% of the adults in the burial sample from the Upper Mantaro sites exhibit cranial deformation, at most 5% of the subadult population exhibit similar changes. This paradox has led me to examine what role physical labor may play in cranial deformation. Specifically, can tump line use account for the mild frontal flattening seen in these skulls? To test this, skulls were examined using Computerized Axial Tomography to measure the skulls at predetermined reference points. Samples of normal skulls and head-bound skulls were compared with mild frontal flattening to determine the structural changes associated with the proposed different mechanical stresses. (10)

Nordby, Larry V. (National Park Service, Santa Fe)

Activity Pattern Identification Through Model Building and Testing: Southwestern Examples.

Analyzing artifact distributions and retrodiction of past activities are often a goal of archaeological research. One method of study entails the development of a series of hierarchically arrayed activity models from ethnographic and archaeological literature. The expected material residues of the models are then compared with statistically defined spatial clusters of artifacts and interior features in order to identify the activities that occurred in Anasazi structures. Using data from the Mesa Verde and Pecos areas, activity patterns present in pithouses, kivas, and several functional classes of surface rooms are described synchronically and compared diachronically. (3)

Noss, J. F. (see Gillispie, T. E.) (37)

Noss, John F. (Harvard)

Mapping Resources and Human Activities in Alaska.

Large quantities of information on presently undisturbed environments and human foraging activities are being collected by resource management agencies in Alaska. This information permits construction of cartographic models of resource abundance and study of the relationship between spatial distribution of resources and human foraging and settlement patterns. Different methods of map analysis are assessed in the context of testing the predictability of human behavior from detailed information about resource abundance and distribution. (37)

Novick, A. Lee (Washington State university)

Lithic Tool Curation and Mobility: An Example from South Carolina.

Differential preservation of artifact classes has resulted in increased research of lithic artifacts to delineate mobility patterns of prehistoric peoples. The study of curated tools, specialized tool production, and debitage byproducts of lithic resources from documented quarry sites can provide information about mobility and/or exchange among hunter-gatherer and sedentary groups. Broken bifaces and debitage, made of locally quarried materials that have been recovered from retooling sites illustrate the types of tools that are desired for curation. The form in which bifaces and cores were produced, used, and transported reflects the technological variability of prehistoric adaptations. Discarded tools of extralocal materials illustrate the end point of a curated technological system. Results of debitage and tool analysis from South Carolina representing these types of behavior are presented and discussed. (8)

O'Brien, Helen L. and Charles L. Redman (Arizona State)

The Microcomputer: An Effective Field Tool?

Microcomputers can be highly effective tools for archaeological field work. General strategies that allow microcomputers to save, rather than consume, time are suggested. The general strategies are illustrated with examples from work at Shoofly Village, Arizona State University's Archaeological Field School and Research Project near Payson, Arizona. Principles affecting the structure of data files and the generation of simple but flexible descriptive reports are discussed. Finally, examples of the statistical analyses of the depositional and distributional contexts at Shoofly Village are presented. (41)

O'Brien, M. J. (see Wood, W. R.) (18)

O'Brien, Michael J. (Missouri, Columbia)

Intensive Surface Collection and Sample Excavation of a Middle Woodland Havana Community.

Surface materials are used in CRM work for several purposes, including identifying site function and interpreting community pattern. The ability to filter out "noise" in surface data is critical, especially when a data set is used to stratify a site for low-intensity excavation. A prehistoric community in eastern Missouri containing extensive Middle Woodland Havana remains was collected intensively, and density distributions of several material classes were used to stratify the site for excavation. Given the questionable nature of plans for preserving the site, the surface collection and how it was used become important considerations. (26)

O'Brien, Patricia J. (Kansas State)

Searching for Morning Star.

The Smoky Hill affiliated C. C. Witt lodge and mound complex dates ca. 1250 A.D. The lodge exhibits evidence of the Pawnee-Arikara four star pillar ideology; the deity *Tirawaht kiriki*: the woodpecker; owls who represent thunder, lightning, wind and clouds; and Morning Star whose symbol is eagle/hawk. The burial mound has the disturbed remains of about nine individuals, shell and bone beads, potsherds, a turtle carapace and 32+ arrowheads. Individual bodies were not discernible due to

heavy rodent activity, but the large number of arrowheads associated with the highly scattered remains of at least one young woman is evidence of a possible sacrifice to Morning Star. (32)

O'Connell, James F. (Utah)

Late Pleistocene Australian Prehistory: Overview and Comparison with Other Areas of the World.

The Australian prehistoric sequence displays some interesting similarities and differences with sequences from other parts of the world, especially the Americas. The continent was initially occupied 40,000-50,000 B.P., probably by fully modern *Homo sapiens*. Data suggesting an earlier occupation by archaic *Homo sapiens* or *Homo erectus* are questionable. The earliest solid economic data suggest that broad spectrum diets, based partly on fish and shellfish, were established in the continental interior by 30,000 B.P., much earlier than elsewhere. Early Australians may have played a role in the extinction of Pleistocene megafauna, but if so it was after a long period (>15,000 yrs) of co-existence. Similarities and differences between this sequence and those from other parts of the world are probably the product of the same processes operating in different environments. (4)

Oetelaar, Gerald A. (Southern Illinois, Carbondale)

Settlement Plans, Environmental Constraints, and Refuse Disposal Patterns.

At any site location, topography and wind direction impose certain constraints on the final form of a settlement. In general, these constraints pertain to efficient maintenance of the communal environment. This study relates the distribution of faunal materials in plowzone and subplowzone features of the Bridges site to the above environmental variables. These data then serve as the basis for inferences about the location of the plaza, principal refuse disposal area, communal processing area, and probable storage areas. This interpretation of the spatial organization at Bridges conflicts with the existing diachronic explanation of this Mississippian settlement. (24)

Oetting, Albert C. (Oregon)

Sociopolitical Complexity in Aboriginal California: A Review of the Evidence.

Recent ethnographic and archaeological work has claimed that sociopolitical organization in aboriginal California was more complex than has traditionally been thought. These claims counter entrenched models of native Californians as isolated "simple folk" and that their hunting-gathering economies necessarily imply egalitarian band societies. Archaeological arguments use differential mortuary practices to infer ranked societies. Recent ethnographic syntheses argue for ranked societies and possibly chiefdoms. The quality of these data is reviewed, along with the assumptions required to infer social behavior from mortuary practices. It is concluded that present ethnological and archaeological evidence is insufficient to substantiate the claims made. (2)

Olivares, R. (see Kerly, J. M.) (20)

Oliver, James S. (Illinois State Museum)

Bone Bed Formation Processes and the Interpretation of Bone Distribution Patterns on Bison Kill Sites.

Attempts to derive cultural meaning from bone distribution analyses of bison kill sites must first consider the natural processes involved in bone bed formation. Rearticulation analyses of bison bone from Shield Trap (24CB91), a pit cave where man may be factored out of the taphonomic equation, show that large bones are buried less rapidly than small bones. A consequence of the longer exposure of larger bones to taphonomic processes active on the surface is the greater lateral dispersal of large bones. Body parts associated with large bones also have high nutrient values. Thus, a positive correlation between bone dispersal distance and body part utility may not be a good measure of butchery activity on bison kill sites. (7)

Olsen, J. W. (47)

Olsen, John W. (Arizona)

Recent Developments in the Late Pleistocene Prehistory of China.

In the past decade intensive fieldwork in China has produced a vast array of new data which shed light upon the Late Pleistocene prehistory of the eastern Eurasian landmass. Large numbers of chronometric dates generated since 1972 have necessitated substantial revision of China's Late Paleolithic sequence as well as the formulation of models which seek to explain similarities and differences among regional traditions. The significance of new Late Paleolithic materials from north and south China is discussed including data from Inner Mongolia which suggest the desiccation of north China is a relatively recent phenomenon. (4)

Olsen, Stanley J. (Arizona)

The Terra-Cotta Equids of China's First Emperor.

One of the most important archaeological finds was made in 1974, near Xian, China. Peasants digging a water well turned up pottery sherds that led to the discovery of hundreds of larger than life-

size figures of warriors and equids that were buried in the burned and collapsed mausoleum of China's first emperor, Qin Shi Huang (259-210 B.C.). Many of the figures have been restored, including equids harnessed to chariots. Although reported as horses, the animals appear to be more like a hybrid cross of onagers and horses. Animals of this sort are known from early tomb paintings in Egypt. The possibility of a similar early cross-breed in China is discussed along with some other possibilities. (55)

Orcutt, J. D. (see Kohler, T. A.) (44)

Osborn, N. M. (see Gradwohl, D. M.) (30)

Oswald, Dana B. (*Natal Museum, South Africa*)
The Spatial Expression of Socioeconomic Behavior.

In order to use settlement plans for examining broad questions of social and economic change, archaeologists must be able to identify the aspects of these plans that reflect social and economic behavior. A case study of the Zulu in South Africa exemplifies the intricate relationship of their settlement plans to their socioeconomic organization. Reasons for this close relationship are discussed, as well as the implications of this study for recognition of socioeconomic organization from settlement plans under other circumstances. (24)

Ottaway, Barbara S. (*Edinburgh, Scotland*)
Excavations of Neolithic Settlements in Southern Germany.

Established settlement patterns of the Bavarian Neolithic are rapidly changing due to extensive aerial surveys, new prospecting methods, large-scale building programs and extension of farming to previously unprofitable land. Two Neolithic sites excavated under the author's direction were among those recently discovered: one, a moist Altheim site, the first excavated in Bavaria, provided much needed paleoecological information; the other, a late Neolithic hillside enclosure, had a single defended entrance and occupational features inside and outside the enclosure. (24)

Parker, S. (see Limp, F.) (41)

Parker, Sandra (*Arkansas Archeological Survey*), **Christopher Peebles** (*Pennsylvania State*) and **Victore A. Carbone** (*National Park Service*)
A Design for a National Cultural Resource Database.

The National Park Service has been mandated by Congress to develop a national computerized cultural resource database. The data base is to serve as a management tool by: (1) assisting the states with meeting their RP3 responsibilities for efficient identification, evaluation, and treatment of cultural resources; (2) serving as a central repository of information about cultural resource projects for federal and state agencies; (3) avoiding duplications of effort; and (4) assisting the Department of Interior in meeting requirements for reporting on cultural matters to Congress. The system is designed as a relational database of information concerning cultural projects, publications/reports, and other databases. (41)

Parkington, John (*Cape Town, South Africa*)
Later Stone Age Adaptations in Cape Province, South Africa.

The Paleoenvironmental and prehistoric archaeological records for the Terminal Pleistocene and Early Holocene at the southern end of Africa are among the richest in the world. This paper will discuss LSA hunter-gatherer adaptations to the changing climates, sea levels, vegetations and faunas of Cape Province based on recent research at coastal and interior sites. Special emphasis will be placed on settlement-subsistence systems and on the role of individual site locations in their functions, as well as on the impact of environmental change on site distributions and roles. (52)

Parry, William J. (*Southern Illinois, Carbondale*), **Galen R. Burgett** (*New Mexico*) and **F. E. Smiley** (*Southern Illinois, Carbondale*)

The Archaic Occupation of Northern Black Mesa, Arizona.

Recent investigations by the Black Mesa Archaeological Project have documented a non-intensive occupation of Black Mesa, Arizona, during the Archaic Period. Six sites yielded discrete radiometrically dated Archaic components. Two sites were occupied in the Early Archaic (ca. 6000 B.C.) while the other four date between 1750-700 B.C. Five sites are small ephemeral campsites, but the remaining site (Tsoie Shelter) contains over 6m of stratified deposits with dates ranging from 6200-2800 B.C. The lithic assemblages from these sites differ from those of later preceramic (Basketmaker II) sites on northern Black Mesa. Projectile points are highly variable with little correspondence to established types. (38)

Parsons, J. R. (10)

Parsons, Jeffery R. (*Michigan*)
Critical Reflections on a Decade of 100% Survey in the Valley of Mexico.

Complete survey coverage has produced a consistent data set which has been useful in making inferences about population, land use, and social organization. In retrospect, however, there are identifiable conceptual and methodological weaknesses which need to be examined in designing comparable new work. These include not only such obvious matters as surface collection procedures, observational intensity, and site definition, but also the question of whether or not a well-designed sampling program might be more cost effective relative to data quality. This paper examines these issues, and concludes that for areas of high surface visibility, 100% coverage still deserves serious consideration. (50)

Pearsall, Deborah M. (*Missouri, Columbia*)
Measuring and Interpreting Change in Macroremain Assemblages: An Example from Panaulauca Cave, Peru.

Charred seeds and tuberous roots recovered from upper strata of Panaulauca Cave (3200 B.C.-A.D. 500) are analyzed to address the question of change in the assemblage over time. Three measures are utilized: presence analysis, frequency of occurrence, and diversity. The patterns of change determined by each measurement are discussed and the relationships between the measurements explored. Factors contributing to the observable patterns are proposed. These include: (1) the nature of refuge disposal at the site, (2) changes in technology, and (3) changes in food choice. (53)

Peebles, C. (6)

Peebles, C. (see Parker, S.) (41)

Pendergast, David M. (*Royal Ontario Museum*)
The Terminal Postclassic and Early Historic Community at Lamanai.

1983-84 excavations at Lamanai revealed portions of the Terminal Postclassic and Early Historic community, marked by ceramics distinct from those of earlier centuries, and equally distinctive architecture. Middens and building surfaces also produced numerous copper artifacts in association with European glass beads, ceramics, and metal objects. The data permit preliminary characteristics of the final Lamanai settlement and the effects of Spanish presence; they also make clear the need for further examination of the community in 1985. In addition, the work illuminates many of the problems inherent in excavation of late prehistoric and early historic Maya remains. (21)

Pertulla, Timothy K. (*Washington*)
Late Caddoan Adaptive Strategies on the Prairie-Woodland Border.

At the time of European contact there were two distinct types of Caddoan agricultural societies on the prairie-woodland border of Texas and Oklahoma. The two types, rural and town communities, had distinct and non-complementary sociopolitical, ceremonial and settlement systems whereas trends in economic strategies were similar and manifest complementary regional developmental processes. Changes in inter-regional exchange with polities living in the South Plains and Southwest will be examined as they relate to the way Caddoan societies evolved post A.D. 1400. (45)

Peters, Charles R. (*Georgia*)
Nuts as Resources for African Hominids.

In the semiarid environments of eastern and southern Africa nuts may provide nutrients more valuable than just protein. Judging by the current vegetation, the main nut providing species native to this interregional area are *Parinari curatellifolia*, *Ricinodendron rautanenii*, and *Sclerocarya birrea*. Geographic availability is examined at continental, regional, and habitat levels of analysis. High frequency areas and seasonality of fruit production are also considered. Physiognomic and floristic (chorological) patterns suggest a regional core in the Zambebian woodlands. Ecological analyses combined with measures of biomechanical strength and options for simple tool use contextual and artifactual correlates for the paleorecord. (37)

Peters, Lynne A. (*Southern Illinois, Carbondale*)
Social Differentiation in Settlement Plans: Lessons from the Dead.

Settlement plans are potential keys to variation in the social statuses of their inhabitants, but few archaeological studies utilize this potential. Most recent investigations of social differentiation rely on mortuary analysis because the theoretical and methodological basis of mortuary analysis is better established than that of settlement plan analysis. Late Mississippian sites in southeastern Tennessee offer the unusual opportunity to use mortuary analysis to develop theories and methods for settlement

plan analysis. Placement of burials within domestic and public areas of settlements highlight and complement aspects of settlement plans useful for investigating social differentiation. (24)

Petersen, J. B. (see Thayer, C. A.) (33)

Petersen, James B. (Maine), Nathan D. Hamilton (Maine) and Arthur E. Spiess (Maine Historic Preservation Commission)

Excavations at the Brigham Site: A Holocene Occupational Sequence from Northern New England.

Recent excavations at the Brigham site in central Maine have revealed a stratified human occupational sequence which spans the entire Holocene after 10,300 B.P. Cultural remains are well isolated in 10 of the 12 natural strata defined at the site, including features and associated subsistence remains, lithics and in the most recent occupations, ceramics. These remains permit correlation of the various occupations with other archaeological complexes of the Late PaleoIndian, Early Archaic, Middle Archaic, Late Archaic, and Woodland (Ceramic) periods in northeastern North America. Particular emphasis is given to chronological and subsistence data for the entire span of occupation since these have been rarely isolated at any other single locality in northern New England and the broader Northeast. (33)

Petersen, K. L. (see Wolf, P.) (44)

Petersen, K. L. (see Kohler, T. A.) (44)

Petersen, Kenneth L. (Dolores Archaeological Program)

Environmental Constraints on Agriculture at Dolores.

Tree-ring indices and pollen analyses provide proxy records for both short- and long-term changes in summer and winter precipitation amounts and growing season lengths for southwestern Colorado. Long-term changes in the locations of the regional potential dry-farming belt limited the settlement location choices of agriculturalists and provided impetus for migrations into and out of the Dolores area. Short-term effects of climate on potential field locations and crop yields within the Dolores area affected settlement locations, and subsistence and organizational strategies. (44)

Phagan, Carl J. (Dolores Archaeological Program), T. Homer Hruby (Minnesota), Phillip D. Neusius (Southern Illinois, Carbondale), and Eric Blinman (Dolores Archaeological Program)

Technological Change in the Dolores Area: A.D. 600-980.

Lithic and ceramic assemblage content and organization are expected to reflect changes in the subsistence behavior (including agricultural intensification) and changes in economic organization with the growth and decline of communities. Expectations for the characteristics of tool and vessel assemblages are derived from predicted changes in resource mix and the potential for economic differentiation within villages. Expectations are evaluated using flaked lithic, nonflaked lithic, microwear, and ceramic data from households, roomblocks, and communities. (44)

Phillips, James L. (Illinois, Chicago)

The Upper Paleolithic of Southern Sinai: A Regional Perspective.

The Wadi Feiran of Southern Sinai is the only basin in the region where up to 40 meter thick lacustrine deposits are associated with a series of early Upper Paleolithic (Ahmarian) sites. The sites are located above, on the edge, and within these deposits and are represented by open-air and rock-shelter occurrences. Excavations from November 1984-January 1985 are scheduled and the results will be presented in this paper. (4)

Phillips, Patricia (Sheffield, England)

Farmer Meets Farmer in Western Europe.

Subsistence practices and exchange relationships of farmers and non-farmers in two West European areas—North-west Europe and the Mediterranean—will be compared with subsequent North-south farmer-farmer relationships. Recent work in France and Switzerland has expanded the data base on the initial contact period. These data are used to assess the significance of technical and other types of information in structuring social relations before and during the initial period of North-South contact. (56)

Pickergill, B. (42)

Piperno, Dolores (Smithsonian Tropical Research Institute, Panama)

The Paleocological Significance of Phytolith Analysis: Data from the New World Tropics.

This paper examines the role that phytolith analysis can play in paleoecological reconstruction, based on present knowledge of phytolith taxonomy and distributions in tropical sediments. A survey of phytolith morphology in some domesticated and wild plants is followed by a review of phytolith

spectra from a number of depositional contexts, including archaeological and geological soils, and surface horizons from present day forests and agricultural plots. The potential of phytolith analysis in agricultural, vegetational, and climatic reconstruction is explored. (2)

Plog, F. (43) (50)

Plog, F. (see Korsmo, T.) (41)

Plog, Fred (New Mexico State)

Regional Styles and Punctuated Equilibrium Models.

The occurrence of truly regional styles on painted ceramics in the northern US Southwest is considered. These are shown to be episodic and to cover different geographical areas at different times. The organizational and behavioral processes that generate regional styles are identified and also shown to be episodic in time and space. The relationship between this variability and environmental and evolutionary theories is considered. Implications for the methods used by archaeologists in constructing space-time frameworks are explored. (23)

Plog, Stephen (Virginia)

Structure, Form, and Content in Southwestern Design Styles.

Several approaches to the description and analysis of Southwestern ceramic design styles have been advanced in recent years. Some focus on design structure, while others emphasize design form or content. Questions of the degree of correlation between these measures have rarely been considered, although most discussions seem to implicitly assume that there is minimal correlation. This issue is addressed from both a theoretical and an empirical perspective, with the latter discussion focusing on the development of regional stylistic traditions in the northern Southwest. (23)

Pokotylo, David L. (British Columbia)

Regional Diversity among Lithic Scatters on the Canadian Plateau and the Interpretation of Hunter-Gatherer Technological Organization.

Given limited assemblage content, small nonresidential sites have posed analytical problems in studies of interassemblage variability, and only recently have they been explicitly considered in formulations of hunter-gatherer subsistence-settlement systems. This paper reports on the relationship of technological organization to small site use and reoccupation, as reflected by chipped stone reduction strategies at low density lithic scatters from upper Hat Creek Valley, Canadian Interior Plateau. Methods for increasing the variety and precision of influence from small site data, and implications of small sites analysis for regional level model building are discussed. (47)

Politis, Gustavo (Museo de La Plata, Argentina)

The Early Man Site of Arroyo Seco, Argentine Pampa.

The multicomponent Early Man to Ceramic Period site of Arroyo Seco, in southern Buenos Aires Province, is reported. The Early Man occupation is discussed. The occupation is defined by the geological and cultural association of unifacial stone tools, several human skeletons and the bones of horse, *Megatherium*, *Myiodon*, *Glossotherium*, *Macrauchenia*, *Paleolama*, *Eutatus*, and *Glyptodon*. Samples of animal and human bones each dated about 8500 B.P. The geological context, chronology, economy and artifact typology and patterning are analyzed and interpreted. (31)

Pollard, Helen P. (SUNY, Plattsburg)

The Political Economy of Prehispanic Tarascan Mining.

Tarascan Metallurgy was not only a complex technology, but a significant marker of elite social status and a major source of wealth for the ruling dynasty. Reanalysis of ethnohistoric material, when coupled with new cartographic and archaeological data, provides insight into the structure and role of copper, gold, and silver production in the Protohistoric Tarascan State. A comparison is made between the very distinctive ways in which the central Balsas, southeast frontier (Cutzamala-Ajuchitlan), and far west (Tamazula-Tepelcatepec) mining regions were exploited by the political, economic core of the state. (28)

Pool, C. (see Kneebone, R.) (27)

Pope, Melody and Tamara L. Bray (SUNY, Binghamton)

The Separation of History and Science: Implications for Archaeological Thought.

The factionalism we see developing in archaeological theory is similar in structure and content to previous theoretical controversies. We suggest that the periodic conceptual revolutions we undergo are directly related to the early separation of history and science in anthropology. The Boas/Kroeber debates of the 1930's are used as a forum for illustrating the effects such a polarization of knowledge has had on our conceptual development and also the value of building on past experience. Based on

our analysis, we suggest that the integration of both historic and scientific forms of knowledge may be a more productive format as we work to develop a theory of the past. (2)

Popper, Virginia (Michigan)

Quantitative Measurements in Paleoethnobotany.

Paleoethnobotanists use several quantitative measurements to describe and analyze their data. This paper discusses the conditions under which absolute counts, ubiquity, and ranking are appropriate and useful for qualifying archaeobotanical data. How do these measurements differ in their assumptions about archaeobotanical data, and what information do they give about such data? Paleoethnobotanists must take into account the quality of preservation of their archaeobotanical remains, the contexts of their samples, the number of sites under study, and their research questions before selecting which quantitative measurements to use. (53)

Portnoy, Alice W. (Texas Tech)

Experience Transfer from Engineering to Archaeology.

It is argued that many conditions that are fairly new in archaeology are well established in engineering, that many problems in each field are similar, and that some solutions to such problems are applicable in both fields. Characteristics which shape these conditions, problems and solutions in each field are compared. They include: traditions, philosophy, training, applications; professional organization; recognition and treatment of social issues. Interactions within and between identities of educational institutions, industry and government are examined for each field. It is suggested that an "experience transfer" from engineering to archaeology would be beneficial. Ways of implementing such a transfer are explored. (2)

Potter, Daniel R. (Harvard)

Middle Preclassic Settlement at Colha, Belize.

Recent investigations, in 1983 and 1985, into the Middle Preclassic period settlement are described. Fieldwork at Colha in the last two seasons has centered on the functional definition of two localities within the Middle Preclassic component (Operations 2012 and 2031), both of which lie beneath the site's monumental center. Operation 2012 has revealed what appears to be a specialized structure used for mortuary activities. Excavations at Operation 2031 have produced structures, features, and artifacts in a context that suggests a domestic/habitation function. This apparent internal functional differentiation in the Middle Preclassic component at Colha is compared with contemporary components at other sites. (54)

Powell, Mary L. (NMNH, Smithsonian)

Biological and Social Dimensions of Community Health at Moundville.

Paleopathological analysis of 564 individuals from the Mississippian community of Moundville in west central Alabama indicates that the patterns of observed variation in skeletal evidence of anemia, trauma, reaction to mechanical stress and infection, and dental wear, caries experience and enamel hypoplasia owe more to the biological factors of age and sex than to the dimensions of ranked status as delineated by Peebles (1974) through mortuary analysis of burial location and artifact associations. Differential diagnosis suggests the presence of an endemic treponemal syndrome resembling yaws which produced a high prevalence of moderate morbidity with negligible impact upon mortality. (34)

Powell, S. (36)

Powell, S. (see Nichols, D. L.) (3)

Powers, Robert P. (National Park Service, Chaco Center)

Cultural Adaptive Variability at Chaco Canyon, New Mexico.

The semi-arid climate of Chaco Canyon, New Mexico, has imposed severe, fluctuating environmental conditions on its human occupants. Based on recent archaeological and paleoenvironmental research, Chaco Anasazi and historic Navajo settlement and subsistence adaptations are examined. It is argued that agriculturally dependent Anasazi adaptation evolved to ameliorate short term drought effects but did not allow positive adaptive response to long term drought. In contrast, the generalized subsistence base, and mobility of the Navajo allowed greater flexibility and adaptability to short and long term climatic perturbations. Implications for survival of secondary agri-cultural adaptations on the Colorado Plateau are discussed. (3)

Pozorski, S. (see Guthrie, M. R.) (45)

Pozorski, Shelia and Thomas Pozorski (Denver)

Late Preceramic through Early Horizon Subsistence in the Casma Valley.

Recent fieldwork in the Casma Valley on the north central coast of Peru suggests that species of tubers, beans, and peanuts but *not* maize were associated with the emergence of coastal civilization.

The cotton Preceramic site of Huaynuna, dating about 2000 B.C., and the early Initial Period sites of Pampa de las Llamas-Moxeke, with dates from 1700-1100 B.C., and Tortugas yielded plant and animal remains which made possible an assessment of the gradual development of coastal subsistence prior to about 900 B.C. At this time, there is evidence of an invasion which resulted in the introduction of distinct ceramic and architectural styles as well as new subsistence items—most notably maize. (42)

Pozorski, T. (see Guthrie, M. R.) (45)

Preucel, Robert W. (UCLA)

Settlement Pattern Succession on the Pajarito Plateau: Hudson's Model Revisited.

Hudson's theory for rural settlement is tested with archaeological data from the Pajarito Plateau, New Mexico. The model distinguishes three stages of settlement process: colonization, spread, and competition, each of which is characterized by specific spatial properties regarding settlement density, settlement distribution, and average site size. Two types of point pattern analysis are employed to quantify settlement distribution, and basic descriptive statistics are used to monitor changes in site size over time. Empirical examination of the Puebloan settlement pattern within the study area from A.D. 1175-1550 suggests the expected sequence of stages did occur, and it is concluded that the model, despite theoretical limitations, provides a high level explanation of the processes of settlement pattern evolution. (3)

Price, Barbara J. and William K. Macdonald (Columbia)

Lies in Archaeology: Ideology and Behavior in Corporate Descent Groups.

The behaviors associated with corporate descent groups in ethnography can be considered as variable, i.e., as manifesting degrees of corporateness in response to demographic and economic processes. The ideology of corporateness should thus vary in a manner consonant with the variable role of such groups in a given social system. These differences should be regularly recognizable on the basis of the patterning and distribution of material objects. In this paper we suggest strategies for the archaeological recognition of such social variation. (49)

Price, T. Douglas (Wisconsin, Madison)

The Close of the Pleistocene in Northern Europe.

Northern Europe offers an outstanding laboratory for the investigation of human adaptation from 12,000 B.C. until the advent of the Neolithic. Major changes in climate, landscape, and topography accompany the close of the Pleistocene in northern Europe. Replacement of arctic flora and fauna by more temperate species following 8000 B.C. offers new opportunities to the inhabitants of the area. Significant changes involve the transition from migratory arctic hunters to sedentary fishing-hunting peoples. Information on subsistence and settlement documents major changes in co-resident group size and in the season and duration of site occupation in this transition. Also of note is the distinct absence of evidence from important areas within the large region. Changes in sea level have hidden zones that originally were the focus of human occupation. (52)

Propper, J. (55)

Pryor, John H. (SUNY, Binghamton)

Toward an Understanding of Style: Context Utilization of Northern California Indian Basketry.

This paper is an attempt to better understand style by viewing it in the rich ethnographic context of northern California Indian baskets. Style is viewed on numerous social levels across a region. Each level acts differently in different social settings and among groups within a region. A stylistic analysis of northern California (Pomo) basket designs shows that a viable archaeological concept of style must be a composite one and how what we call style is derived from social context. Levels of style and different social contexts within the Pomo region are compared to demonstrate these points. (23)

Pyburn, A. (see Hammond, N.) (39)

Pyburn, Anne (Arizona)

Demographic Implications of Non-Mound Occupation at Nohmul, Belize.

To date, prehistoric population and settlement patterns have mostly been described for the Maya area in terms of housemounds. However, recent studies have suggested that a significant portion of Maya habitations may have been constructed without mounds. This study presents data on the geographic and temporal extent of non-mound occupation at the site of Nohmul in northern Belize. The significance of such occupation for current demographic models of the Maya area is discussed. (39)

Pye, Mary E., and Eric C. Gibson (Harvard)

Colha, Monopolistic Theories and the Development of Major Political Centers.

Economic factors, particularly monopolies, have long had prominence in archaeological theories of how major centers formed. Such reasoning has become axiomatic and has been employed to account for the emergence of Kaminaljuyu, Teotihuacan, and many other sites. At Colha a monopoly in lithic industrial production is manifest in the Late Preclassic when hundreds of thousands of tools were produced. In all of what is now Belize, no other site had such a monopoly. Yet, Colha was never a prominent center. This paper compares magnitude, scale, and organization of production at several Mesoamerican Late Preclassic sites and reconsiders monopolistic theories and what constitutes a primary center. (54)

Quick, Polly McW. (California, Berkeley)

Subsistence and Then Some: Adding Other Aspects.

Most recent models of hunter-gatherer adaptation focus on subsistence behavior. Ethnographic data can be used to explicate and evaluate the assumptions about non-subsistence behavior implicit in such models. Information about subsistence and non-subsistence behavior of individuals in two California Indian societies is used to assess and amplify a general model applied to prehistoric California. Examination of the nature of gender-associated roles and statuses in the cases also contributes to recent criticisms of the characterizations of "man-the-hunter" and "woman-the-gatherer" commonly found in models of small-scale societies. (51)

Quimby, G. (13)

Ramenofsky, Ann F. and Ann M. Whitmer (Louisiana State)

Seed Blower Experiments in Separating Small-Scale Archaeological Samples.

Although the seed blower is typically employed by seed technologists for sorting pure from impure seed and inert matter, the instrument has applications for a range of archaeological contexts where traditional water flotation techniques are not possible. The blower separates samples by density and surface area and, within certain boundaries, can rough sort the full array of small-scale archaeological samples. Mechanics of separation by the blower are described; results of separating archaeological flotation samples from south central Louisiana are presented. (40)

Rands, R. L. (see Bargielski, M. M.) (40)

Raspen, D. J. (see Todd, L. C.) (47)

Rasson, Judith A. (Pacific Lutheran)

Neolithic Pits and Pit Contents.

Preliminary report on the excavation of pits and other features from Ocsod-Kovashalm, Hungary, dating from the Middle-Late Neolithic transition (Tisza-Szokol groups). Techniques of excavation, flotation and the results of quantitative sampling are described. (56)

Rattray, Evelyn C. (Instituto de Investigaciones Antropológicas, Mexico)

The 1983-84 Excavations at the Merchants' Barrio, Teotihuacan.

Recent excavations on the northeast edge of Teotihuacan have verified the existence of a foreign Gulf Coast and Maya affiliated community that flourished between A.D. 450-600. The relationship is expressed in architecture, ceramic artifacts and other goods imported from the Gulf Coast and Maya regions. Results of the 1983-1984 field season will be discussed. (40)

Read, Dwight W. (UCLA)

Archaeological Theory and Statistical Methods: A Fundamental Discordance and a Possible Resolution.

The incorporation of more complex statistical procedures into the analysis of archaeological data has generally been justified by broad archaeological goals with an emphasis on correctness of application of statistical methods at a technical level. Justification, however, must ultimately be made at the level of the conceptual foundations underlying statistical methodology and the conceptual framework of archaeological theory. It is argued in this paper that there is an automatic discordance between the assumptions underlying the practice of statistical analysis of data and the theoretical framework used to give meaning to archaeological data. A resolution of this discordance is illustrated in the context of constructing a projectile point typology. (9)

Redman, C. L. (see O'Brien, H. L.) (41)

Reese, Kathryn V. (Texas A&M) and Fred Valdez, Jr. (Harvard)

Transitional Phase Ceramics: An Example from the Northern Belize Formative.

The focus of this paper is the pottery of the Middle Preclassic (Mamon) and the Late Preclassic (Chicanel). We will review selected ceramics that are usually of a problematic nature in that they are

transitional between two existing complexes. These transitional specimens in macroscopic analysis appear to be Late Preclassic in various modes while also retaining Middle Preclassic characteristics. It is the dichotomous attributes of these Formative artifacts that make them difficult to place within a ceramic sequence. The sample for the questions raised here is derived from various sites in Northern Belize. (54)

Reeves, B.O.K. (Calgary)

Canadian Plains Archaeology: The First Fifty Years.

Serious research into archaeology of the Canadian Plains and Rocky Mountains began in the 1950s. In the 1970s, with the passage of the Provincial Heritage Acts, provincial bureaucracies and conservation archaeologists complemented the efforts of Provincial and Federal agencies. The results of these studies have been to outline the cultural and land use history of the region, and to identify the major contributions and its study to our understanding and interpretation of prehistoric native peoples. Three themes of international interest are reviewed: early man and the glaciation/deglaciation of Western Canada, the bison hunting economy and religious structures of the plains, northern Rocky Mountain cultural and exploitive patterns. (22)

Reid, J. Jefferson (Arizona) and Ezra B. W. Zubrow (SUNY, Buffalo)

Contract Archaeology as Rock Art.

Confusion during the past decade has produced a false impression of the relationship between funding sources and the significance of research results. An acrimonious and divisive result has been the separation of contract archaeologists from their academic colleagues. A more appropriate framework for evaluating archaeologists and their research contributions partially accounts for the factors that inhibit contract archaeology from contributing to method, theory and a more secure reconstruction of past behavior. (58)

Reitz, Elizabeth J. (Georgia)

Preceramic Animal Utilization on the Central Coast of Peru.

Zooarchaeological analysis of faunal remains deposited at archaeological sites along the central coast of Peru during the Preceramic have provided data altering standard interpretations of human subsistence strategies in this area. In this paper the standard interpretations are reviewed followed by introduction of new data excavated from the central coast sites of La Paloma and Chuqitanta. These data document heavy utilization of marine resources by coastal residents. Analysis of these resources also suggests that a variety of technologies were employed in the subsistence effort. (42)

Reyman, Jonathan R. (Illinois State Museum)

The Burials of Chaco Canyon.

Although archaeologists have expected to find thousands of burials at Chaco Canyon, fewer than 500 are reported in the literature; approximately 300 more are noted in unpublished field notes. Recent discoveries of unpublished records of Pepper and Wetherill indicate that: (1) many more burials were found, (2) there were burial mounds in the canyon and its environs, and (3) several large cemeteries probably still remain in the canyon and at outlying sites. The implications of these findings for the occupation of Chaco are discussed, specifically, refutation of the hypothesis that the canyon was a "deserted ceremonial center" for most of the year. (3)

Rice, Don S. (Chicago) and Prudence M. Rice (Florida)

Settlement Dynamics in the Central Peten Lakes Region, Guatemala.

Recent archaeological research in six lake basins in the central Peten indicates heterogeneity in aboriginal Maya settlement characteristics through time and across space in the region. These are described, and the relative influences of cultural and environmental variables on Maya settlement dynamics and the disparate basin patterns are explored. Some biases in data preservation, recovery, and analysis are suggested and the implications of these for sociological and demographic reconstructions of Peten Maya population history are discussed. (39)

Rice, Glen E. (Arizona State) and Jill Netzel (Smithsonian)

The Modeling of Classic Period Communities in South-Central Arizona.

This paper examines the evidence for a particular type of dispersed "urban-like" community pattern which originated during the Classic Period of the Hohokam and related traditions. Their community complexes include elite and nonelite residences, public buildings, systems of terrace gardens, and specialized work areas. Such complexes may cover up to 10 square miles, and can be treated as single although dispersed communities. Data gathered from the Tonto Basin as part of CRM sponsored research are used to support this model. It is shown that the levels of funding needed to fully document the organization of these Classic Period community complexes can only be expected through CRM projects. (58)

Rice, P. M. (27)

Rice, P. M. (see Rice, D. S.) (39)

Rice, Prudence M. (Florida)

Postclassic and Historic Period Pottery from Negroman-Tipu.

Postclassic and Historic period pottery recovered from excavations at Negroman-Tipu includes locally manufactured types, types and forms apparently brought in from adjacent areas of the lowlands (northern Belize and Peten), and European manufacture (olive jars and majolica). These materials provide a basis for establishing the ceramic chronology of the site from Early Postclassic through Historic periods, investigating aspects of Postclassic production and exchange relationships in this frontier area, and studying the changes in the local ceramic industry under Spanish acculturative influences. (21)

Richerson, Peter J. (UCD) and Robert Boyd (Emory)

The Evolution of Symbolic Cultural Traits.

Human uses of symbols represent one of our species' most distinctive characteristics and one of the most difficult to understand in Darwinian terms. A model of cultural evolution under the influence of indirect bias, a choice-based force formally analogous to female-choice sexual selection, is used to examine these controversial difficulties. Under some circumstances, indirect bias leads to fitness maximization; under others to the evolution of group-functional or afunctional traits. If the model is apt, sociobiological and symbolic hypotheses can be compared within a consistent theoretical framework. (17)

Rigaud, Jean-Philippe (Direction des Antiquites Prehistoriques d'Aquitaine) and Jan F. Simek (Tennessee)

"Arms Too Short To Box With God": Problems and Prospects for Paleolithic Prehistories in Dordogne, France.

Recent regional studies of paleolithic prehistory in southwestern France have relied on data suffering from fundamental problems: (1) biased site selection, (2) biased sampling of site contents, (3) cave and rockshelter formation, and (4) varied site formation processes in the open air. These biases result in an archaeological record of dubious utility for regional scale analysis. New kinds of data are needed if regional patterns in paleolithic sites are to be examined in behavioral terms. Examples of these new data are presented and directions for future research are defined and discussed. (4)

Riggs, Rodney E. (Wisconsin, Madison)

Ceramic Change in the Mid-Ohio Valley.

Using ceramics from the Turner, Sand Ridge, Turpin, and Madisonville sites near the mouth of the Little River in southwestern Ohio, an attribute based ceramic chronology is being established for the area. The chronology will span the entire time that ceramics were produced in the area—from Early Woodland through the Proto-Historic period. Questions of cultural continuity and change are being tested. Computer assisted univariate and multivariate statistical analyses are being used, including multi-dimensional scaling. A report of the results of this study will be given. (11)

Rindos, David (Trumansburg, New York)

Darwin's Essay of 1844 and Evolutionary Theory in Anthropology.

Darwin's concept of evolution in 1844 differed from that presented in the *Origin of Species* in several important ways. Species were seen in typological terms. Individual variation was seen as accidental in relation to evolutionary change. Selection was intermittent and produced a perfect adaptation of the species to the environment. Most "modern" evolutionary and ecological models in anthropology resemble Darwin's idealistic and natural-theological theory of 1844 and have yet to incorporate the ideas he finally advanced in 1859. (17)

Rissman, Paul Charles (Pennsylvania)

Assessing Seasonal Pastoralism: Annual Rings in the Teeth of Domestic Mammals.

The degree of mobility in a pastoral economy can be inferred by examining the pattern of annual rings in herd animals' teeth. Because rings form each year of life and are colored by seasonal influence, the last-formed ring will indicate the time of year of an animal's death. Data from a group of animals will suggest the seasons' that a herd was kept at a given site, information vital to the reconstruction of mobile pastoral organization. Theory, method and assumptions of pastoral seasonality determination are presented using examples from a 2nd millennium B.C. settlement of the Harappan tradition in India. (7)

Rippeteau, Bruce E. (South Carolina)

Money as a Selective Pressure in the Evolution of the Quality of Data and Theory in American Archaeology.

The contractors and administrators of contract archaeology have for the last decade been at the center of activity of American archaeology because of the amount of money available to them. The issue of whether big money can serve as a viable selective pressure for quality in archaeological research is discussed. The results of the nationwide effort by contract archaeologists, and particularly those of the Arizona archaeologists presented in this symposium, are evaluated by asking if the funding could have been better spent, given the historical context of our imperfect world in which contract archaeology developed. (58)

Ritterbush, Lauren W. (Kansas)

Implications for Prehistoric Water Collection and Conservation at Wupatki National Monument.

In this paper, prehistoric water collection and conservation practices are inferred from archaeological remains and ethnographic analogy with historic horticulturalists in arid to semi-arid regions of the world. Archaeological data are drawn from archaeological survey of portions of Antelope Prairie, within Wupatki National Monument, Arizona, and from limited excavations at two sites, each consisting of a prehistoric reservoir or water catchment basin. Paleoenvironmental conditions for the study period [A.D. 1065-1300] are considered and analogy with historic cultures of generally similar environments is used. (3)

Robinson, C. K. (see Breternitz, D. A.) (44)

Robinson, Christine K. (Dolores Archaeological Program), William D. Lipe (Washington State) and Allen E. Kane (Dolores Archaeological Program)

Evaluation of the Dolores Archaeological Program's Modeling Effort.

The results of testing the Dolores Archaeological Program's least-cost based model are summarized and evaluated. The model provides an explanatory framework for the overall trends and some of the detail of cultural change in the Dolores area for the A.D. 600-980 time period. Weaknesses are evident in those aspects of cultural systems where expectations are less explicitly derived from least-cost principles. Some apparent discrepancies between expectations and observations are examined using alternative formulations, particularly a maximization model. (44)

Roczek, Thomas R. (Michigan)

Spatial Variability and Social Variability: Analysis of Navajo Settlement Patterns.

The spatial correlates of social units are examined using settlement data from previously published ethnographic studies of five Navajo communities in Arizona and New Mexico. These studies include recent (1970s) and older (1930s) data. Two issues are addressed: (1) the correspondence of ethnographically observed social proximity to settlement proximity and (2) the correspondence of discrete units with discrete clusters identifiable in the settlement data. Contingency table, nearest neighbor, and cluster analyses are used. Seasonal settlement shifts and economic variables are considered in accounting for the variability observed among the five samples of settlement data. (3)

Roemer, Erwin (Texas A&M)

Colha Lithic Production as a Factor in Settlement Pattern Analysis.

Settlement pattern analysis at Colha depends on the firm justification of various activity loci. Drawing on Late Classic evidence at the site, this area details how areas of lithic production are defined. These manufacturing points are of prime interest because the massive debitage deposits at Colha remain essentially unique. Based on findings at several Late Classic deposits, some crucial terminology is defined. What constitutes a Colha workshop? What is our conception of craft specialization? The archaeological evidence is provided to justify the use of these concepts. A look is provided at recent lithic analysis that attempts to measure the evidence in a way that is relevant both to theoretical jargon and practical comparative needs. (54)

Rogge, A. E. (see Lincoln, T. R.) (8)

Rogge, A. E. (Bureau of Reclamation) Archaeology as Big Science.

An "external" history of science analysis is used to build a perspective for the changes wrought by federal archaeology during the past two decades. A century and a half of federal involvement in archaeology is reviewed to show that the recent increase in scale and scope of the program is indicative of a quantum leap to "big archaeology" a phenomenon analogous to the post-World War II development of "big science." Some built-in structural hazards of "big archaeology" (first encountered by "big

science") are described. Although simple recognition of such limiting factors is a first step in overcoming them, it is argued that a more heroic approach to federal archaeology is in order. (18)

Rollefson, G. O. (see Simmons, A. H.) (55)

Root, Dolores (Brattleboro Museum)

Equality/Inequality in Production: A False Dichotomy.

While recent theoretical and empirical insights on the evolution of hunter-gatherer/egalitarian societies have broadened our view of the variation in production in these societies, little attention has been given to the material variables embedded in the social relations of production. This paper identifies and examines variables that people manipulate in subsistence production, and considers the consequences of these actions for mediating and maintaining unequal demands on individuals' surplus labor. This approach is then applied to the prehistoric Northeast and offers new ways to understand the social dynamics of intensifying food production in these societies and in non-stratified societies in general. (49)

Roper, Donna C. (Gilbert/Commonwealth Inc.)

A Consideration of Woodland Settlement Variability in the Prairie Peninsula.

Varying resource potential has long been posited as underlying Woodland settlement variability in the Prairie Peninsula. Vital to full validation of this position are pan-regional comparisons of ecological variability and settlement systems. Broad trends in ecological variability across the Prairie Peninsula are presented and foraging models are employed to predict settlement configurations. The predicted configurations are then compared with available data on settlement systems in river valleys from Michigan to Kansas. Change in settlement is also discussed. (33)

Rosen, A. (see Hesse, B.) (55)

Rosen, Arlene (Israel Geological Survey)

Holocene Environments and Settlement at Tel Lachish, Israel.

Alluvial sequences in central Israel reveal a history of climatic and landscape changes from Chalcolithic through Byzantine times. These are closely related to social and historical events at Tel Lachish. The deposits indicate a moister climate during initial settlement in the Chalcolithic period. Rapid floodplain buildup in the Middle Bronze I suggests an instability in the drainage system corresponding to widespread abandonment of cities. A dry period of wadi incision followed until the deposition of colluvium in the Late Iron Age, apparently from neglected agricultural terraces following the Assyrian destruction of Israelite Lachish. A later fill accompanied Byzantine settlement. (55)

Rosen, M. (see Hector, S. M.) (8)

Rosen, Steven A. (Hebrew, Israel)

The Origins of Pastoral Nomadism in the Negev Desert, Israel.

Intensive survey and test excavations indicate that the introduction of pastoral economies in the southern desert zone of Israel occurred 2000-3000 years after the development of domestication economies in the heartland. The first evidence of domesticates is not found until the Chalcolithic period while Neolithic economies in the Negev were based on intensive hunting and gathering. The Early Bronze Age showed a florescence of pastoral nomadism. The evolution of pastoralism can be related to the "secondary products revolution", and to the establishment of economic ties with the villages and cities of the North. (55)

Rosenthal, Beryl (Indiana, Indianapolis)

Innovation and Constraints: Factors Influencing Iroquois Carving Style.

A number of factors influence the development of individual and local stylistic variation in Iroquois mask carving. While a survey of the literature shows previous interpretations emphasizing religion, other social and psychological factors interact systematically to affect decision making in the carving process and artistic license. The three primary bases for artistic decision making are discussed: (1) religious factors, including mythological characters; (2) social factors, including culture change, the Seneca Arts Project, commercialization, etc.; and (3) psychological factors, including the complex interaction between patron, carver, and public expectation. (16)

Ross, Richard E. and Crystal Schreindorfer (Oregon State)

An Early Interior Site in Southwestern Oregon.

Results of several years of investigations by Oregon State University archaeologists suggest strong interior influences and use in the coastal environment of southwestern Oregon at least 3000 years ago. Materials recovered from recent excavations at the deeply stratified Marial site 60 miles upriver along the Rogue River show compelling similarities with the 3000 year old non-marine coastal sites,

plus a well established interior culture at 7000 years with strong similarities to the later coastal sites. Deep levels at the Marial site have yielded material dating in the 8000-9000 year range. (40)

Rothschild, Nan A. (Barnard, Columbia)

Faunal Insights from Modern Food Remains.

A pilot garbage project was conducted in New York City last year to evaluate relative compliance with a recent bottle-return bill in several neighborhoods differing with respect to socio-economic and population composition variables. A second type of analysis was directed towards the recovery of information on food consumption. The effect of income, ethnicity, and population density on archaeologically recoverable food remains are described, using ratios of fresh to processed food, and foods leaving archaeological remains to those leaving none. Interpretations are offered for prehistoric and historic research as well as contemporary situations. (7)

Rowlette, R. (56)

Rozaire, Charles E. (Los Angeles County Museum)

The Bladelet Industry on Anacapa and San Miguel Islands, California.

The finding of stone bladelets and shell beads on Anacapa and San Miguel Islands expands our knowledge of the interrelationships both within the California Channel Islands and between them and the mainland. Expanding on the quarry, workshop, processing and use sites reported on from Santa Cruz Island, more information is provided on the technological diversity of bladelet production with concomitant typological considerations as well as the chronological aspects of these manufacturing techniques. (59)

Rozenberg, C. (see Kaplan, L.) (42)

Rue, David J. (Penn State)

A Palynological Analysis of Human Impact in the Copan Valley.

Soil and sediment samples from a set of loci in the Copan Valley, Honduras, including two "aguadas" or swampy areas and two caves, among others, are analyzed palynologically to elucidate information on questions dealing with human impact on the environment and agricultural systems. Such research pursuits include the beginnings of land clearance, differential land use within the region, the nature of agricultural systems generally, and the abandonment of agricultural lands with the Classic Maya collapse. Such explanations shed further light on broader themes in Maya cultural evolution. (1)

Russell, G. S. (see Costin, C. L.) (48)

Russell, Glenn S. (UCLA)

Lithic Evidence for Wanka Household Response to the Imposed Inka State Economy.

The Wanka, a central Peruvian Andean chiefdom, was conquered by the Inka state in A.D. 1471. Strong economic change occurred in terms of demands made by the Inka and new economic opportunities available to the local population. Analysis of change is made with evidence of stone tool production and use at the household level. Changes in production and use resulting from Inka demands as well as potential increased market opportunity are considered. Evidence for change in the organization and intensity of tool production as well as the subsequent use of tools in craft and subsistence production is presented. (10)

Sabloff, J. (13)

Sabo, George (Arkansas Archeological Survey)

Mound-Building as Material Symbolism: An Example from the Western Ozark Highland.

Excavations at several Mississippi Period mound centers in the western Ozark Highland of Arkansas, Missouri, and Oklahoma indicate a consistent pattern of ceremonial mound construction. Elements of this pattern go beyond the basic engineering requirements of earthwork construction and include such features as intentional use of varied sediment colors and textures, specialized treatment of construction surfaces, and maintenance of spatial arrangements among stratigraphically discrete features. When evaluated in relation to ethnographic data on Southeastern Indian cosmology and ceremonialism, mound-building in this region appears as one means by which prehistoric Indians materially expressed key elements of their cosmology. (34)

Saitta, Dean J. and Arthur S. Keene (Massachusetts, Amherst)

The Concept of "Surplus" Production: Its Status and Effects within Alternative Theories of Non-Stratified Society.

The concept of "surplus" production is frequently invoked by archaeologists to account for a variety of phenomena in non-stratified societies including changes in the division of labor and the rise of social asymmetry. This paper critiques conventional usage of the surplus concept and demonstrates

how it has constrained our understanding of social and economic change. An alternative conceptualization is offered in which surplus is viewed not as excess product but rather as a complex relationship between labor and the host of social conditions organizing its extraction and distribution. The implications of this understanding for problem formulations of social process and change in prehistory are illustrated. (49)

Salwen, B. (5)

Salwen, Bert (New York)

Regional Conference Results from the Northeast.

This paper will consider the status of the Northeast Regional data base, standards and guidelines for the conduct of cultural resource management in a regional context, and interaction of regional planning with state and federal regulations and the State Plan process. (25)

Sandefur, Elsie C. (UCLA)

Animal Use in Andean Wanka-Inka Households: Changes in the Subsistence Economy.

Analysis of animal bone from Wanka sites indicates differential use in elite and commoner households that became more pronounced following Inka conquest. Overall little evidence exists for direct intervention by the state in camelid herding. After the conquest, the diets of the elite included more camelid and deer, while commoners shifted meat use to dogs and guinea pigs. An increase of mica in elite households may reflect differential access to food grains. A decrease in water-dependent species may suggest increased aridity in Wanka III, perhaps the result of induced environmental changes. (10)

Sanders, W. T. (20)

Sanders, William T. (Penn State)

A Quantitative Measure of Urbanization at Copan.

An absorbing topic in Maya archaeology continues to be that of the nature of Classic Maya centers—their political, religious, and economic functions. Most particularly the debate has focused on whether they had fully evolved urban characteristics and can be considered cities. In this paper urbanization is viewed as a process and a quantitative approach is used to measure this process at Copan. The data base is generated from large-scale excavations of house compounds and regional surface survey. (1)

Sandweiss, Daniel H. (Cornell)

Occupational Specialization on the Late Prehispanic Andean Coast.

Ethnohistoric evidence for the socioeconomic organization of the Andean coast during the final prehispanic periods differs significantly from the widely-used "verticality" model derived principally from highland sources. Documentary evidence for the coast suggests that political units were divided into distinct, occupationally specialized residentially discrete and possibly endogenous socioeconomic subunits. One of the clearest cases is the valley of Chincha, where preliminary results from archaeological excavations confirm the documentary records of a settlement of specialized fishermen who traded dried and salted fish for non-marine resources, principally plant foods but also metal, textiles, and ceramics. (42)

Santley, R. S. (39)

Santley, Robert S., Janet m. Kerley, and Raul Olivares (New Mexico)

The Structure of the Classic Obsidian Production-Distribution at Matacapan, Tuxtla Region, Veracruz, Mexico.

Recent investigations at Matacapan in the Tuxtla Mountains of southern Veracruz have attempted to characterize both the Teotihuacan presence and the Classic period obsidian production-distribution system in the community. The 6,000-plus controlled surface collections and 83 stratigraphic excavations provide data which indicate marked changes in the structure of the Middle and Late Classic obsidian production-distribution systems. Changes occurred in the ways obsidian was exchanged over long distances, the source deposits which were utilized, the production technology, and the functional usage. It is evident that the long distance distribution systems organized by Teotihuacan and its successor Tula differed in significant ways. (20)

Savelle, James M. (Alberta)

Thule Eskimo Settlement-Subsistence Strategies in the Central Canadian Arctic.

Recent archaeological investigations in the central Canadian Arctic have resulted in evidence of two regional, but contemporaneous, "Classic" Thule Eskimo (ca. A.D. 1100-1400) settlement-subsistence strategies, one based primarily on bowhead whales and the other primarily on caribou. Furthermore, the investigations suggest that changes in the availability of the primary faunal resources toward the end of the "Classic" Thule period resulted in significant changes in these strategies at the

time. This paper will examine the two regional settlement-subsistence strategies, and changes therein, in terms of their respective organizational components. (22)

Schiffer, Michael B. (Arizona)

What You See Is What You Get: Is Surface Survey Sufficient for CRM?

In most CRM projects, surface surveys provide the exclusive source of information used to describe and evaluate the resource base. By considering a variety of regional-scale formation processes, this paper disputes the adequacy of contemporary surface surveys to provide a complete characterization of the archaeological resource base, even in areas where field conditions are optimal. Recent CRM projects in the American Southwest are used to illustrate these arguments. Advice is offered on how to devise better survey strategies. (26)

Schlanger, Sara H. (Washington State)

Population Change in the Dolores Area, A.D. 600-1125.

Changes in several Dolores population parameters are predicted from analysis of local and regional climatic characteristics between A.D. 600-1175. Increasing population size is expected when dry farming was possible in the Dolores area and in the region. Increases in growth rate, migration rate, site longevity, density and coresidential group size are expected when farming was possible only in the Dolores area. Archaeological estimates of population size, site longevity, site size and density, patterns of population growth in the surrounding region, and proportion of nonlocal materials in household artifact inventories, are used to evaluate predictions. (44)

Schmader, Matthew F. (New Mexico)

Variability in Ceramic Function and Assemblages.

The ratio of a ceramic vessel's maximum height and minimum diameter (H/D) most reliably predicts primary function. Using this ratio as a standard, variability in vessel function can be assessed. Ceramic assemblages are collections of vessels, and can be characterized by the number of vessels having H/D ratios within certain increments. Several basic types of assemblages are identified by using ethnographic and archaeological examples. Consideration of assemblage QTypes has implications for monitoring site function, ranges of functions that vessels perform, the role of ceramic containers, and food preparation strategies. (27)

Schmidt, Peter (Brown)

Symboling in Archaeology: Towards a More Humanistic Science.

The paradigms of Western archaeology are ideological mystifications that obscure and transform historical consciousness in non-Western cultures. Structural analysis of contemporary archaeology reveals that the definition of research problems perpetuates a dominant ideology that obscures indigenous history. Moreover, the processes of reasoning employed at the level of interpretation and in ethnoarchaeology are transformational. The recognition that archaeologists symbol in their theoretical stances and practice of archaeology compels self reflection and a move towards a more humanistic stance; one that begins to deconstruct the paradigms and symbols that continue to mystify history and archaeological interpretation. (51)

Schmitt, D. N. (see Juell, K. E.) (7)

Schoenwetter, James (Arizona State)

Methodology and Maize Pollen.

It has recently been claimed (Conard et al. 1984) that the palynological evidence of Middle Archaic maize cultivation at the Koster site is not authentic. The methods and procedures of authentication which were applied are presented to refute this position. The related question of credibility is then addressed, with attention to the issue of the adequacy of this evidence to support the behavioral inference of maize cultivation. It is argued that adequacy must be judged in this case on principles which are more commonly employed in paleontology than in archaeology, and may seem contrary to those we normally apply. (33)

Schreiber, Katharina J. (UCSB)

Domestic Architecture and the Identification of Prehistoric Household Units in the South-Central Highlands of Peru.

The elucidation of household units through a study of domestic architecture in the Carahuarazo Valley, Ayacucho, is discussed for the period from the initial development of pottery through the Spanish conquest. Changes in domestic architecture, and related changes in inter- and intra-site settlement patterns are then viewed in a larger political-economic context. Diachronic changes appear to reflect changes in economic production, along with several other factors, brought about by periodic political conquest and subsequent collapse of the political superstructure. (48)

Schreindorfer, C. (see Ross, R. E.) (40)

Sept, Jeanne M. (Harvard)

Eden's Forbidden Fruit? Plant Food Foraging Opportunities in East African Habitats.

The opportunities for a hominid to forage for plant foods would be affected by: (1) the nutritional properties of the plant foods, (2) plant food harvestability, (3) plant food distribution within and between micro-habitats, and (4) plant food seasonal availability. Recent field surveys have documented these attributes of plant food feeding opportunity near rivers in semi-arid Kenya. Transect data and harvesting experiments provide a basis from which to develop models of early hominid diet breadth and foraging strategies, and the relative importance of plant and animal foods in early hominid diets. (37)

Shackley, M. Steven (Arizona State)

Lithic Raw Material Procurement and Archaic Mobility Strategies in East-Central Arizona.

The identification of lithic raw material sources in Archaic contexts is used as one index of mobility and land use. Observational and geochemical tests are employed to identify source and archaeological material. Diversity measures are devised to monitor shifts in lithic procurement strategies through the Archaic period in east-central Arizona. The results of these tests and measures of material and diversity are used to infer probable land use and mobility strategies. Used in concert with other lines of evidence (i.e. faunal, paleobotanical), a generally more complete reconstruction of prehistoric mobility strategies is possible. (36)

Shafer, Harry J. (Texas A&M)

Community-Wide Lithic Craft Specialization in the Late Preclassic Lowland Maya: A Case for Northern Belize.

This paper examines the evidence for Lowland Maya community-wide craft specialization in the lithic craft production in the Late Preclassic and Late Classic settlements of Colha, Belize. This development of lithic specialization is attributed to several factors, among them the localized occurrence of high quality cherts. Is this archaeological expression of community-wide craft specialization unique in the lowlands or does it simply represent a more visible indication of economic complexity in the region beginning in the Late Preclassic and reaching an apogee in the Late Classic period? (54)

Shapiro, G. (see Williams, J. M.) (34)

Shapiro, Gary (Florida)

Ceramic Vessels and Site Variability.

Archaeologists who study human settlement must understand the range of site types that make up a settlement system. Toward this end, we commonly compare sites along the dimension of size, architectural complexity, floral and faunal remains, production vs. consumption of goods, representation of exotic items, and burial furniture. Another important indicator of site variability is the frequency of ceramic vessel classes at each site. Analysis of vessel size and shape can provide data to address questions about relative site permanence, relative size of groups for whom food was prepared, and degree of site specialization. Archaeological examples are presented. (27)

Shaw, Leslie (Massachusetts, Amherst)

The Utilization of Faunal Resources During the Preclassic in Northern Belize.

The excellent preservation of faunal remains found at Colha and Kichpanha provide an opportunity to evaluate the dietary importance of animals for the Preclassic Maya. The composition of several faunal samples from domestic/habitation areas at Colha and from a house mound context at Kichpanha will be discussed with regard to species dominance, butchering patterns, and portions of carcasses represented. This information will then be used as a foundation to present a model of meat acquisition, exchange, and consumption. Special consideration will be given to recognizing exchange, either on the local market level or on a regional basis. (54)

Sheehy, James J. (Penn State)

Demographic Aspects of Elite Households in Late Classic Copan.

A continuing debate in Maya archaeology has revolved around the demographic structure of Late Classic Maya households. This paper examines the problem from the perspective of an elite household at Copan, represented by Patio Group 9M-22-A. Population estimates are generated for this patio group for each of a series of time-spans during the Late Classic Coner Phase. These population estimates are then compared with other excavated patio groups in the densely occupied zone of Sepultura. Finally, the implications this demographic profile holds for interpreting the demography of other patio groups at Copan and other Maya centers is discussed. (1)

Shelley, Steven D. (Washington State)

Bone Tool Technology from the Wallace Ruin, A Chaco Outlier Near Cortez, Colorado.

The bone tools from the Wallace Ruin are described. Manufacturing processes and potential tool uses are examined. The technology is similar to that found in other Anasazi sites, except that the numbers of bone awls appear in greater abundance. This is attributed to site specialization in clothing or skin manufacture, possibly for export. This specialization may have been part of the Wallace Ruin's economic function within the Chacoan system. (3)

Sherratt, Andrew (Ashmolean Museum, Oxford)

Area Survey and Regional Context.

This paper looks at the question of generalization from intensive survey data to regional patterns. It stresses the need to place planned survey results in the context of more haphazardly accumulated information reported in literature or filed in museum records. This is important both to assess the representative character of the area surveyed, and to calibrate the less reliable information available from a larger region. The main example presented is eastern Hungary in the Neolithic and Copper Age, but reference is also made to comparable work in other areas. (15)

Shimada, Izumi (Harvard)

Productivity, Specialization, and Space as Resources: An Ethnoarchaeology of Morrope Potters.

An ethnoarchaeological study of traditional paddled ware pottery production by individual families in Morrope on the northern Peruvian coast enables us to scrutinize archaeological approaches for defining the degree and nature of productivity, specialization, and spatial utilization of "household production". Three dimensional artifact distribution in systemic context, daily and seasonal changes in spatial utilization and productive activities are emphasized. The production of highly standardized vessels using the paddle and anvil technique is primarily a winter activity by those who identify themselves as farmers or fishermen, and productivity is largely influenced by success at the firing stage. (48)

Shimada, Melody (Harvard)

Zooarchaeology of the North Highlands of Peru: Early Horizon to Late Intermediate.

Faunal data from the 1979 and 1982 excavations of the University of Tokyo Expedition in the Cajamarca Valley are providing a detailed picture of animal utilization over time. Data come from several sites of different character and environmental setting representing over 2000 years of prehistory in the Cajamarca Basin (Early Horizon to Late Intermediate). An abrupt shift from deer to domesticated camelids (probably in the Late Early Horizon) in Cajamarca contrasts with more gradual shifts noted elsewhere (e.g. Kotosh and Chavin de Huantar). Also zooarchaeological data from the Basin must be seen in light of probable exploitation of the yunga zone and contact with North Coastal polities. (42)

Siemens, Alfred H. (UBC, Vancouver) and Mario Navarrete (IAUV, Jalapa)

Vestiges of Field Systems in Subhumid Central Veracruz.

Air reconnaissance after May plowing has shown that the sloping plateau between Jalapa and the humid lowlands are webbed in numerous locations with complexes of rectilinear stone lines nonconformal with current tenure. Some are apparently field boundaries, others terrace retaining walls. Their form is analyzed and related to environmental conditions as well as materials on settlement and agriculture in this and analogous areas. It is hypothesized that the lines represent intensive precontact agriculture that can be linked with the pre-contact wetland field systems already demonstrated for neighboring wetlands into a larger system. (28)

Šimek, J. F. (see Rigaud, J.) (4)

Simmons, A. H. (see Mandel, R. D.) (55)

Simmons, Alan H. (Kansas) and Gary O. Rollefson (San Diego State)

'Ain Ghazal, an Early Neolithic Community in Jordan.

Three excavation seasons have been completed at the Early Neolithic village of 'Ain Ghazal, Jordan. From these investigations it is clear that 'Ain Ghazal represents a major Neolithic population center, exceeding Jericho by at least three times. Major findings from the site include: well-preserved subsistence remains, suggesting varying degrees of domestication; the discovery of a spectacular cache of human statues; and the documentation of Pre-Pottery Neolithic B and Pottery Neolithic components, as well as a possible aceramic transition phase. These and other findings are discussed, as is 'Ain Ghazal's place within the early Levantine Neolithic. (55)

Simpson, Kay (Office of Historic Preservation, Iowa)

Intensive Artifact Inventory on Archaeological Survey.

An intensive artifact inventory and surface inspection method without extensive artifact collection used during a large-scale survey in Saguaro National Monument, Arizona, is described. On small sites

each surface artifact is field inventoried by simple morphological categories, and on large complex sites artifacts are sample inventoried. Quantitative information on percentages of sherd and lithics, percentages of lithic raw materials, ratios of decorated sherds to plainwares, and density of surface artifacts can be derived. These data are used to classify sites and to distinguish between Archaic and Ceramic period occupations on sites without diagnostic artifacts. (2)

Skins, David C. (Maine)

Shell Midden Site Formation.

Shell midden sites on the coast of Maine are constructed from the deposition of exploited mollusc remains which reflect changing environmental conditions and seasons of occupation. Documentation of the prehistoric settlement patterns are evaluated through the analysis of four hypotheses: (1) sites consist of functionally discrete activity areas, (2) large sites are inhabited by groups who occupy a segment of the total area available, (3) sites are utilized during specific seasons, and (4) there is great potential for post-depositional disturbance which may alter or obscure site formation processes. (12)

Skinner, Shaune M. (Ohio Historical Society)

An Examination of the Potential Use of Phosphorus of Soils as an Archaeological Survey Tool.

The possibility of utilizing phosphorus analysis as a tool for archaeological survey has been examined. Soil samples from settlement-affected and sterile soils were subjected to phosphorus determination by four different chemical fractionation procedures. The perchloric acid digestion procedure was determined the best indicator of anthrosols. Employing this method, variations in the phosphorus content of soils as an indicator of abandoned settlements was evaluated. Results indicated that variations in phosphorus values inter-regionally may denote the presence of abandoned settlement loci. However, the utility of variations in phosphorus to delineate the vertical or horizontal boundaries of cultural deposits is limited. (2)

Slawson, Laurie V. (TerraMar International Services, Inc., Tucson)

Plain Ware: The Forgotten Artifact?

Contrary to popular thought, plain ware ceramic analysis can provide relevant and valuable information for use as both independent and supportive data bases in site interpretation. Using data obtained from the analysis of plain ware ceramics collected during a surface survey of a large group of Hohokam sites located on the San Xavier Indian Reservation southwest of Tucson, Arizona, a multi-faceted analytical and interpretive study is presented. Based on an attributable ceramic analysis, functional, temporal, and cultural issues are approached which focus on the determination of intra-site and inter-site variability, culture change and long-distance trade. (11)

Smart, T. L. (see Hoffman, E.S.) (53)

Smart, Tristine Lee (Michigan)

Status Differentiation and Economics in Non-Stratified Societies: Adena and Hopewell in Southern Ohio.

Increases in status differentiation in a non-stratified society affect the organization of production, consumption, and distribution. Archaeological remains from the Early and Middle Woodland periods in southern Ohio (Adena, Hopewell) provide an example of this type of social change. Adena and Hopewell remains consist primarily of mortuary sites. At these sites, an increase in status differentiation is indicated by increases in quantity and changes in type of grave goods that reflect high status. The economic implications of these changes in terms of procurement, production, and final distribution of these high status goods are considered. (49)

Smiley, F. E. (see Parry, W.J.) (38)

Smith, C. Earle (Alabama) and David Lentz (Mississippi)

A Lowland Tropical Dietary Pattern.

From Honduras to the middle Orinoco region of Venezuela, prehistoric people utilized the same several species of food plants at all lowland tropical sites so far excavated with plant remains recovery. The greatest bulk of recovered plant material is palm endocarp and kernel, probably largely from coyl (*Acrocomia*). This is accompanied by seeds of a number of fruits. Early levels in Venezuela (2500 B.C.) and Panama (5000 B.C.) are pre-maize, but recoveries in Costa Rica (2500 B.C.) and Honduras (A.D. 1000?) are with maize. In all areas, after the introduction of maize, palm remains a significant part of the plant remains. None of the tree crops display morphological changes which signal cultivation, but all are cultivated today. (40)

Smith, Michael E. (Loyola)

The Archaeology of Social Stratification: Measuring Wealth from Household Artifacts.

Archaeologists have traditionally used two lines of evidence to infer the existence and nature of prehistoric social stratification—burials and architecture. This paper examines a neglected third line

of evidence—household artifacts. Ethnographic descriptions of stratification systems are used to develop a series of artifactual correlates of differing levels of wealth and differing access to basic resources. Specific wealth-related distinctions are discussed for the realms of tools and technology, diet and food preparation, food serving, household religious activity, and luxury or status objects. Several general properties of artifacts and assemblages that reflect wealth differences are discussed, including quality, diversity and place of origin. Consideration is also given to the role of formation processes in determining the degree to which wealth differences are expressed in household artifact inventories. General and specific points are illustrated with ethnographic and archaeological examples. (2)

Snethkamp, Pandora E. (UCSB)

Prehistoric Exploration Practices and Paleoenvironments on San Miguel Island, California.

Statistical analysis of shellfish remains from column samples collected on San Miguel Island has revealed that certain species tend to covary with each other. The shellfish species in one cluster inhabit today the intertidal zone, whereas those in another cluster are principally subtidal. To account for changes in the prevalence of different clusters, hypotheses are considered which relate the changes to shifts in exploitation patterns or alternatively to fluctuations in sea temperatures. (59)

Soffer, Olga (Wisconsin, Milwaukee)

Upper Paleolithic Conubia, Refugia, and the Archaeological Record East of the Carpathians.

Broad temporal and spatial perspectives predominantly on the Upper Paleolithic record of Western and Northwestern Europe have recently led researchers to postulate pan-continental spheres of interactions as well as large-scale population movements. The rich archaeological record of Eastern and Central Europe (USSR and Czechoslovakia) will be used to evaluate these hypotheses as well as to offer an "Eastern" perspective on the archaeological data from Late Pleistocene Europe before, during, and after the last glacial maximum. (4)

Solecki, Ralph S. (Columbia)

The Shanidar Cave Protoneolithic Cemetery and its Implications.

A small cemetery belonging to the Protoneolithic period (Zawi Chemi Shanidar/Karim Shahr Culture) dating from ca. 10,800 B.P., found in Shanidar Cave, Iraq, provides us with behavioral comparisons with the contemporary Natufian culture of the Levant. The cemetery so far excavated contained 31 individuals in some 26 graves, encompassed in part by a low stone wall. Fire was used as part of the burial ritual, associated with pebble stone pavements. The physical remains were identified as belonging to the Eurafian type. (55)

Spaulding, A. C. (13)

Spaulding, Albert C. (UCSB)

Archaeological Interpretation 1935.

Comments and impressions on important topics of discussion in 1935 will be presented from the standpoint of a novice graduate student of the period. Interrelationships between the available volume of data and analytical methods will be emphasized. Subsequent transformations of basic concepts into formalized and explicit theory will be explored. Specific topics include the infancy of quantitative analysis, premonitory rumblings on functional patterning and evasive maneuvers around cultural evolution. (14)

Spielmann, Katherine A. (Iowa)

Farmers and Hunters: Interdependence Among Non-Stratified Societies.

Interdependent relations between hunter-gatherers and horticulturalists often result from the regular exchange of resources. A model based on ecological models of mutualism is offered to explain: (1) the advantages to a certain degree of specialization in resource production and exchange, and (2) the conditions which select for the development of interdependent relations. Mutualistic relations open several evolutionary paths for interacting populations: (1) hunter-gatherers may adopt agriculture, (2) horticulturalists may become full-time hunter-gatherers, or (3) specialization on the part of one or both populations may increase. The conditions under which each of these trajectories is expected to be followed are discussed. (49)

Spiess, A. E. (see Petersen, J.B.) (33)

Spink, Mary L. (Penn State)

Exchange Systems in the Copan Area.

Exchange systems in the Copan area are examined in terms of the intra-regional distribution patterns of utilitarian items. General models of local trade based on ceramic studies in the Maya Lowlands

are tested with data from the Late Classic Copan ground stone and lithic industries. These data shed light on the nature of the social structure and economic organization at Late Classic Copan in regard to the utilization, control, and distribution of local resources. (1)

Spoerl, P. M. (35)

Stafford, C. Russell (Center for American Archeology)

Hunter-Gatherer Settlement Strategies: A Regional Perspective on Intra-Site Spatial Analysis.

Current approaches to intra-site spatial structure tend to focus on the reconstruction of activities at single sites. When viewed from a regional perspective, however, the limitations of conventional analyses become evident. This paper reviews reconstructionist approaches (especially quantitative ones) noting both the difficulties in decomposing the archeological record into identifiable events and the inappropriateness of the resulting units in testing regional models of hunter-gatherer settlement strategies. An alternative approach is outlined which emphasizes measures of the spatial dimension which can be directly applied across sites in a region. Differential depositional environments in a region are also considered. Data collected from the lower Illinois Valley are used to address these issues. (47)

Stanish, Charles (Chicago)

Household Domestic Areas, Moquegua Valley, Southern Peru.

This paper reports on recently completed excavations in the Moquegua Valley of southern Peru in which complete rooms were the basic excavation unit and identification of total household domestic areas was a principal research objective. The excavations spanned a time period from Tiwanaku 5 (Expansive) to Inka in a circumscribed settlement system at approximately 2500 meters above sea level. This paper contrasts two sequential, pre-Inka/post-Tiwanaku phases demonstrating: (1) activity areas within such households; (2) archaeological correlates of such activities; (3) the nature of household change resulting from increased nucleation, increased population density, and non-agricultural economic restructurings and; (4) linkages between these sierra sites and altiplano communities. (48)

Stark, Barbara, L. (Arizona State)

The Study of the Origins of Agriculture.

The history and current status of research on the origins of agriculture in the New World are examined from a comparative perspective. Relevant concepts, prehistoric processes, research methods, and explanations are evaluated. The primary areal foci are the Midwest, Mesoamerica, and ancient Peru. (14)

Steele, D. Gentry (Texas A&M)

Recognition of Taphonomic Provenience as an Aid for Identifying Agents Causing Bone Modification.

Two goals in taphonomic studies are to understand the processes which create bone assemblages, and to identify agents causing specific forms of bone modification. Attaining these goals is difficult, however, because several taphonomic agents create similar patterns of bone reduction and distribution. In instances where more than one agent may have caused the distribution or reduction of bone the recognition of the context in which the action occurred may help to identify the taphonomic agent acting upon the bone. To facilitate the use of context in these taphonomic studies the concepts of primary and secondary taphonomic provenience are developed. (7)

Stein, Julie K., and G. Thomas Jones (Washington, Seattle)

Facies in Shell Middens.

Artifacts and ecofacts, discovered within archaeological deposits, are usually the major targets in archaeological recovery techniques. If these artifacts are found in low densities within a matrix composed predominantly of mineral sediment, then the principal strategy of the excavation is simply to locate and separate the artifacts and ecofacts from the sediment. In shell middens the matrix enveloping the artifacts is often ecofactual material instead of mineral sediment. The mechanics of excavating middens are particularly challenging because there is no component of the record that can be legitimately discarded. The research staff of the San Juan Island Archaeological Project has devised an excavation strategy that records the location of artifacts, quantifies their volume, and identifies the varieties of the surrounding ecofacts, utilizing the concept of facies. (12)

Stemper, David M. (Wisconsin, Madison)

Late Time Period Architecture of Wetland Farmers of the Daule River Floodplain, Ecuador.

No area of the world has yielded more evidence of chiefdoms, and less progress in analyzing them, than northern South America. Data from a case study of one such chiefdom along the Daule River, Ecuador, will be presented. Excavation of parts of two residences provide information on method of construction and time of use. From their proximity to wetland and the presence of spindle whorls,

we infer that the residents of the wattle-and-daub structures produced fibers, probably by raised field agriculture, to manufacture cloth. In the 1500's the floodplain farmers were renowned for the production of quality cotton garments and the movement of commodities by rafts. (48)

Stephen, David V. M. (Pima)

Microcomputers in Archaeological Research.

Microcomputers represent an efficient means of collecting, processing and integrating the diverse kinds of data associated with archaeological research and are a cost effective alternative to mainframe computers. Discussed will be a variety of uses developed over the past six years including field data collection, C.A.D., for archaeological applications, laboratory automation, instrument interfacing, graphics, data base management and how these applications have been integrated. (41)

Stephens, Jeanette E. (Southern Illinois, Carbondale)

Settlement Plan and Community Interaction.

Settlement layout affects the flow of movement within a residential community and enhances or inhibits social interaction. Building locations as well as external space impose measurable limits on the degree to which social contact can occur. Spatial qualities that promote social activity include the uniformity, proximity, and accessibility of facilities and communal areas. Those qualities that inhibit it include distance and the presence of physical barriers. Settlement plans from small Mississippian sites in southern Illinois demonstrate the close relationship between settlement layout and the potential for social interaction among community residents. (24)

Stephenson, Pamela S. (Washington State)

Lithic Refuse Disposal Patterns: An Archaeological Study.

Recent ethnoarchaeological studies examine the relationship between intra-site spatial organization of activities and refuse disposal. Archaeological data from Nawthis Village, Utah, are used to test a model of lithic debitage refuse types and distribution patterns. Analyses focus on reduction stage, size, and association with features. Results support the propositions: (1) inside structures, large items are near walls and small items are near hearths; and (2) outside structures, larger items occur away from structures and features. Small items, however, are predominant in exterior peripheral areas. It is proposed that the spatial patterning results from two combined disposal strategies and relates to differential intensities of spatial use. (8)

Steponaitis, Vincas P. (SUNY, Binghamton)

The Achievements of Contract Archaeology in the Southeastern U.S. since 1970.

Over the past 15 years, federally sponsored "contract archaeology" has led to a great increase in the scale of archaeological activity in the southeastern states. Among the most significant projects have been various multi-year, regional efforts designed to mitigate the destruction caused by waterway, dam, and power plant construction. These projects have led to advances in a number of areas, including: (1) greater understanding of prehistoric subsistence, (2) a resurgence of interest in architectural and community patterns, and (3) a more complete investigation of small sites that were previously ignored. (18)

Stevenson, Marc G. (Prince of Wales Northern Heritage Centre)

Sourdoughs and Cheechakos: The Emergence of Ethnic Identity Among Non-Sedentary Populations.

A theory for the emergence of ethnic identity among non-sedentary populations is constructed with reference to two historic gold rush sites in the southwest Yukon. The role of material culture in the emergence and maintenance of ethnic identity is examined, and the conditions under which ethnicity is likely to emerge are considered. These conditions may be met in numerous diverse settings, including Altamira, a hypothesized Upper Paleolithic campsite in Cantabrian, Spain. The Altamira data is reevaluated in light of this theory, and it is posited that it is the construction and use of new stylistic elements on engraved bone, not the diversity of such designs (Conkey 1980), that suggest that Altamira was an aggregation site. It is at the point of understanding how and why ethnic boundaries initially emerge that McQuire's (1982) theory on the likelihood of their persistence becomes most useful. (2)

Stewart, Andrew and Michael Jochim (UCSB)

Late and Postglacial Changes in Central Europe.

A series of pronounced changes in technology, subsistence, and settlement characterizes the late and postglacial of Central Europe. These changes, however, are not synchronous and the most dramatic alterations occur during the late glacial period rather than with the transition to the Holocene. The varying role of environmental factors in these changes is examined. The paper draws on results of recent excavations by Jochim in the Federsee region of SW Germany, as well as on work by several German Prehistorians. (52)

Stewart, R. Michael (Berger and Associates)

Ceramics of the Lower Delaware River Valley.

A ceramic sequence for the Coastal Plain/Piedmont zone of the Delaware River Valley is presented. A number of archaeological problems are addressed using these data: the purpose of analytical types and appropriate methods; the relative insignificance of tempers, surface treatments, and decoration as chronological signposts; the delineation of gross or territorial boundaries; trade relationships; and the possible existence of incipient ranked societies during late Middle Woodland times. (5)

Stipp, J. J. (see Johnson, R. A.) (46)

Stone, C. L. (see Bostwick, T. W.) (58)

Storey, Rebecca (Houston)

Burials and Social Class: Biological Aspects.

Biocultural analyses of skeletal populations from ranked societies in North America and elsewhere have revealed that health and mortality burdens apparently are lighter for the upper statuses of a hierarchically structured society. The skeletal population of the Classic Maya center of Copan comes from households of varying statuses, as judged from archaeological context. Ongoing analysis is revealing the health and mortality corollaries of the different statuses at Copan and that households within the higher status multiphase groups will show fairly complex internal ranking. (1)

Stohtert, Karen E. (Texas, San Antonio)

Evidence for a Preceramic House and Domestic Activity Areas in A Poorly Stratified Las Vegas Midden, Santa Elena Peninsula, Ecuador.

A domestic structure and a possible activity area were found in the deeper levels of the preceramic midden where refuse accumulated on sterile sand between 8170-9800 B.P. A circular wall trench and pits intruded into sterile soil, and a hearth and several larger artifacts were associated with the intrusive features. This pattern of associations distinguished the Las Vegas type site from smaller Vegas sites and is the basis for an interpretation of Las Vegas household economy. (48)

Straus, Lawrence G. (New Mexico)

The End of the Paleolithic in Cantabrian Spain and Gascony.

Recent archaeological excavations in Asturias, Santander, the Basque Country and Les Landes have provided a wealth of data on Wurm Tardiglacial and early Holocene environments and on Terminal Paleolithic and Mesolithic hunter-gatherer adaptations. This paper discusses the evidence for Magdalenian and Azilian technology and settlement subsistence systems in light of rapidly and markedly fluctuating climates and vegetations. Present data reveal no patterns of close correlation between changes in archaeological assemblages and changes in environment, and suggest considerable continuity in long established subsistence trends, as opposed to sharp breaks at ca. 10,000 B.P. (52)

Studemund, Sarah J. (Washington, Seattle)

Implications of Population Thinking and Middle Range Theory.

Traditional anthropological models of the evolution of culture are founded in an essentialist ontology. In contrast, populationist thinking—which underlies Neo-Darwinian theory—emphasizes phenotypic variation within populations upon which selection operates. The use of systems-theoretic approaches has hindered development of population-scale models of adaptation, as well as middle range theory needed to test these models against archaeological phenomena. Models of regional settlement and subsistence are explored using data from a multicomponent site in the Pacific Northwest Coast region. (17)

Stute, James (Scottsdale Community) and Julie Hoff (Arizona State)

Camp Miller: The Excavation and Interpretation of an 1867 Army Field Camp in Arizona.

Camp Miller, an army field camp occupied for one month in 1867 was located through the use of historical Army documents, terrain analysis and metal detectors. The camp's original layout was reconstructed by mapping each individual artifact recovered by the detectors. Three major activity areas; kitchen, bivouac, and train (supplies) were discovered. The camp's layout differed dramatically from the layout prescribed in the 1861 U.S. Army Regulations. As military field camps are rarely discussed in either the historical or archaeological literature, the analysis and interpretations of Camp Miller will aid in future research on frontier army field activity. (30)

Sumner, William M. (Ohio State)

Regional Survey in the Near East: An Iranian Example.

The Kur River forms an endoreic basin at ca. 1600 m., above sea level in the Zagros Mountains. Full coverage archaeological surveys in the valley (ca. 3000 km²) reveal habitation and other sites of

Middle Paleolithic to recent date and produce data on the structural properties of the archaeological record and environment that are unlikely to be evident from sampling surveys. These structural properties are essential for an understanding of settlement system spatial organization, the patterned relationship between settlements and environmental variables (soil, water, and other resources), and subtle shifts in these patterns consequent on changes in subsistence production or localized craft production. (50)

Sussman, Carole E. (Berkeley)

Initial Results of an In-Depth Investigation of Microwear Analysis on Experimental Quartz Tools.

It has been a commonly held assumption that microwear analysis was not applicable to stone tools made of quartz due to its high reflectivity and hardness. This paper is the result of investigation of use wear traces left on experimental quartz tools. Microscopic analysis of the worked edge using both metallurgical and scanning electron microscopes reveal scarring (edge damage), pitting, striae and apparent textural changes on the quartz surface. Flakes of Brandon flint (used for the same amount of time on the same materials) were used as a control; polish attributes for flint having been well documented and described. (8)

Suter, M. (see Johnson, R. A.) (46)

Sutton, Mark Q. (UCR)

On the Numic Expansion: Data From the Ethnographic Period.

The reality of the Numic expansion has been debated since it was proposed in 1958. Although the hypothesized expansion has yet to gain general acceptance among archaeologists, data from the ethnographic period suggest that the Numic speakers were expanding at the time of contact and that this expansion had been ongoing for some time. This would seem to support the proposed expansion in an archaeological context as well. (36)

Szter, Christine R. (Arizona)

Domestic Animals, Trading Posts, and the American Frontier: An Ethnohistorical and Faunal Analysis at the Hubbell Trading Post.

The Hubbell Trading Post is the longest continually operated trading post in the United States. Excavations and ethnohistorical documentation from this site provide information on Navajo, Hopi, Spanish, and Anglo interaction during its occupation. In terms of commerce, trading posts are a unique phenomenon on the American frontier. One aspect of this trade—domestic animals—is analyzed through a detailed study of the excavated butchered faunal remains and ethnohistorical documentation of the buying and selling of sheep, goats, and cattle. (30)

Tainter, J. A. (2)

Tamers, M. A. (see Johnson, R. A.) (46)

Taschek, Jennifer T. (Oregon)

Late Classic Rural Domestic Architecture in the Upper Belize Valley.

Extensive clearing excavations at the rural settlement of Guerra on the south bank of the Mopan River in the Belize Valley have documented the form and internal structure of a Late Classic Maya riverine village. Two distinct social strata within the community are identified on the grounds of housing, artifactual, and burial criteria. A typical peasant household assemblage is defined and the ways it differs from that of the more elevated status groups are specified. Finally, the possible functional relationship of Guerra to the nearby minor center of Buena Vista is considered. (21)

Taylor, R. E. (see Koerper, H. C.) (40)

Teague, Lynn S. (Arizona State Museum)

Interpreting Diversity Among the Hohokam.

A significant decline in regional homogeneity in material cultural and settlement subsistence systems at the close of the Sedentary Period has been a central element in many reconstructions of late Hohokam prehistory. This has been defined at various times in terms of population movement or changing regional alliances, but has been generally perceived as reflecting a decline in the integrity of the Hohokam cultural and economic system. However, research during the past decade has compelled reexamination of basic assumptions about the meaning of diversity in the region. It is increasingly apparent that models predicated upon a general collapse of social and economic interaction among subregions are inadequate. This has led to increased attention to specific mechanisms of interaction and integration and to consideration of a new range of potential sources of change. (58)

Tedlock, Barbara (Tufts)**The Importance of Ethnoastronomy to Archaeo-astronomy in the Maya Area.**

Archaeoastronomy has previously focused almost exclusively on solar phenomena. Ethnoastronomy in the Maya area shows the importance of lunar and stellar phenomena. These factors require a reorientation of conventional approaches to interpreting settlement locations and understanding calendrics, among other things. Current ethnographic work among Mayan peoples has demonstrated a large fund of previously untapped astronomical information which is of importance both to astronomers and archaeologists, and which continues to be applied in Mayan agricultural practice and midwifery today. (51)

Terrell, John E. (Field Museum of Natural History)**Causal Pathways and Causal Processes: A Populationist View of Human Diversity in Time and Space.**

Understanding variation in language, customs, and human biology from place to place and from one time to another can be called a process of apportioning elements of human diversity to chance, history, and adaptation. The populationist view is a way of thinking about the past and the causal pathways leading to the present that builds on the modern definition of science as a continuous dialogue with Nature (including the world as human artifice) joining human imagination with logical and empirical methods of evaluation. How this point of view is restructuring our understanding of Pacific prehistory is illustrated by reference to the question of "Polynesian origins." (17)

Thayer, Cynthia A. (GAI Consultants, Inc.), Nathan D. Hamilton (Maine) and James B. Petersen (Maine)**Geoarchaeology of the Brigham Site: A Sequence of Holocene Deposition from Northern New England.**

Recent archaeological investigations at the Brigham site in the Piscataquis River drainage of central Maine revealed a deeply stratified Holocene record of human occupation dating to as early as 10,300 B.P. Prehistoric cultural remains are present within 10 of the 12 defined natural strata, which extend to 1.8-2.1 m in depth. Radiocarbon dates on select cultural features and natural strata provide an absolute chronology of sediment deposition at the site. Various detailed geological analyses of the sediments and their chemical constituents are reported. These analyses are related to the varying episodes of human occupation and changing depositional regimes in the local riverine system during the entire span of the Holocene. (33)

Thomas, David Hurst (American Museum of Natural History)**Hunter-Gatherer Studies.**

Contemporary archaeology emphasizes the variability in past adaptive and positioning strategies. Unlike traditional views of hunter-gatherer society (which tended to isolate discrete modal types), today's research explores regional and site structural diversity. There is concurrent coming of age in middle range inquiry attempting to bridge the gap between the behaviorally viable and the archaeologically visible. The trend toward theoretical and methodological integration is especially evident in site structural approaches. Recent research points up the inadequacy of intra-site random sampling strategies, and focus is shifting toward analysis of entire sites. Such inquiry is greatly enhanced by recent advances in remote sensing technology. (14)

Thunen, Robert and James A. Brown (Northwestern)**Is There Cultural Interaction without Trade?**

The cultural patterning characteristic of inter-regional cultural interaction is an outgrowth of a distinct kind of trading relationship. Much more than an epiphenomenon of inter-group trade, interaction can be more appropriately regarded as indicative of the presence of inter-group trade among settled, but relatively dispersed groups. In the context of the Hopewellian case, interaction is shown to have thrived in the absence of high volume trade and to have been based on the joint participation of peoples from widely separated regions in inter-group ceremonies. These participants are argued to be based on mutual advantages. (23)

Timbrook, Jan (UCSB)**Island Chumash Ethnobotany.**

Ethnohistoric research has enabled a partial reconstruction of the ways in which indigenous peoples exploited the rich variety of native plant resources in the Santa Barbara Channel region after European contact. Distinctive aspects of plant use by the Chumash of the Northern Channel Islands are described, with particular attention given to implications for the archaeological record of the late prehistoric era. Several ways in which the islanders may have modified the botanical resources in their environment are also discussed. (59)

Todd, Lawrence C. (Smithsonian), David J. Raspen (New Mexico) and Eric E. Ingbar (New Mexico)
Glimpses of Organization: Integrating Site Structural Studies With Analysis of Assemblage Content.

Recent ethnoarchaeological studies have included the development of dimensions for interpretation of assemblage content and investigations of the spatial organization of activities. Research at the Bugs Holding Site, a late Plains prehistoric winter occupation in northwestern Wyoming is aimed at the interpretation of ethnoarchaeologically derived techniques for understanding prehistoric hunter-gatherer adaptive strategies. Analysis of both distributional patterning and assemblage content are combined in the identification of site specific activities. Interpretations of the organizational structure of activities at the site extended to preliminary statements about regional settlement structure. (47)

Toll, H. Wolcott (National Park Service, Chaco Center)**The Nature and Implications of Ceramic Specialization in the Chaco Anasazi System.**

Specialization is frequently cited as an essential component of complex systems such as that proposed for Chaco. Means of demonstrating the existence of specialists are few, but the consistency of metric variability in a large body of ceramics from Chaco makes it likely that some villages made more pottery than others throughout the Anasazi occupation. There is slight reduction in variability concurrent with the system's fullest extent, but comparisons with ethnographic production suggest that the degree of "standardization" evident does not necessarily imply strong socio-economic control in the system. (11)

Toll, M. S. (see Donaldson, M. L.) (3)**Toll, M. S. (see Cully, A.C.) (38)****Toll, Mollie S. (New Mexico)****Flotation Sampling: Problems and some Solutions.**

Archaeological projects vary tremendously in time and budget emphasis given flotation analyses, and particularly in attitudes towards retrieval of low frequency data in situations of poor preservation. Archaeologists are generally ready for an alternative to taking a chance on squandering a sizable chunk of their budget on many samples that tell them nothing, or taking so few samples that no meaningful patterns can be determined. A two-level sampling procedure, applicable to pollen and macrobotanical work as well, is described in use. The procedure allows a broad overview of patterning of subsistence remains and preservation conditions, and more specific attention to sites or site areas of particular interest. (53)

Toor, Karen (Washington State)**Ethnoarchaeology of Ceramics in Upper Egyptian Villages.**

An ethnoarchaeological investigation of three Egyptian villages was undertaken in 1983 to obtain data on ceramic vessel functions, household pottery inventories, and breakage-replacement rates by vessel type. Methods included directed interviews and observation of household activities. Brief descriptions of vessel functions, average household collections, and varying "life cycles" of three pottery types will be presented. A mean household inventory of 28 vessels was obtained for the three villages, but variability was noted by community in representation of vessel types. Comparison with a previous study showed a reduction in numbers of ceramics as plastic and metal containers have become popular. (27)

Towner, Ronald H. (Washington State)**Projectile Point Rejuvenation: A Technological Analysis.**

The morphological and technological attributes of lithic debitage produced by projectile point rejuvenation are described. Specifically, thirty projectile points were rejuvenated after experiments with hafting and use. The debitage produced by rejuvenation is compared to that produced by projectile point manufacture. This research indicates that rejuvenated activities can be identified by debitage analysis if the proper sampling techniques are employed during excavation. (8)

Trachte, Margaret C. (Washington, Seattle)**Understanding Variability in Eastern North American Agriculture.**

The emergence of agriculture in eastern North America has only recently been recognized as coevolution. The circumstances under which maize agriculture occurs, its relationship to other aspects of society, and the rates of fixation of this specialized technology are geographically variable and not clearly understood. Carbon 12/13 isotopic ratio analysis of radiocarbon-dated human bone and traditional subsistence-settlement data are suggested as means of more clearly defining the specifics of this evolutionary process. The Upper Ohio Valley serves as a case study in examining the circumstances of agriculture as coevolution. (17)

Trigger, B. C. (51)

Trigger, Bruce G. (McGill)

Archaeology and American Society.

Although EuroAmerican society has viewed itself as a melting pot, native Americans have remained excluded from it both socially and symbolically. The dominant society initially perceived the archaeological remains of the native Americans as those of an inferior, static, and vanishing world. Growing evidence of change in prehistoric times recovered during the early 20th century did not produce a significantly more positive view of their creative potential. Despite growing concern with heritage conservation and the stress that processual archaeology has laid upon the internal dynamism of native American cultures, the archaeological record continues to be treated as the alienated heritage of a living people. (14)

Tringham, R. (5)

Tringham, Ruth (Berkeley)

The Organization of Production in the Prehistory of Southeast Europe.

The investigation of the household as the unit of production has become a frequent focus of research into non-stratified societies. This paper discusses the dangers inherent in the investigation of the role of the household in socioeconomic change in prehistory when its reconstruction must be carried out at a level of inference far removed from the archaeological data itself. The paper proposes the use of "units of production", based more directly on observations of the archaeological data, in the reconstruction of socioeconomic transformation of prehistoric societies. Using such units, evidence is presented for the transformation of social reproduction in the 3000 year period of the Neolithic-Early Bronze Age in Southeast Europe. (49)

Tuck, James A. (Newfoundland)

Archaeology in Atlantic Canada.

Using a chronological approach, recent developments in the archaeology of Atlantic Canada are described. Prehistoric cultures starting with PaleoIndians and their successors, a long sequence of Archaic developments, recent Indians, and Paleo-Eskimo occupations are discussed briefly. Recent developments in historical archaeology—from the Norse, through 16th century whalers and fishermen, the initial English colonization, to the mid-19th century—are also mentioned. (22)

Upham, S. (3)

Valdez, F. (see Reese, K. V.) (54)

Valdez, Fred, Jr., (Harvard; Texas, San Antonio) and Shirley Mock (Texas, San Antonio)

Early Postclassic Settlement at Colha, Belize: Problems in Ceramic Typology and Chronology.

This paper reviews several existing problems in the ceramic typology and chronology of the Early Postclassic period. Although the Colha Postclassic pottery has been questioned recently in terms of its temporal placement, we feel secure in our present designation. Our research and analysis of the Postclassic ceramics are presented to substantiate the present interpretations. The data for this study, derived primarily from the Postclassic pottery at Colha, is then reviewed with reference to other Postclassic collections from Belize, Guatemala, and Yucatan. Future studies of the Postclassic materials from Colha are also posited as a means of further testing our findings. (54)

Vance, Elizabeth D. (APTech)

Potential of Microartifacts other than Microdebitage.

Microdebitage, recognizable lithic debitage less than 1 mm in size, has been used since 1982. But there is great information potential from other types of recognizable human debris in the same size range: microartifacts in the broad sense. This paper presents some of the other possible artifacts: microflakes and microchunks, but also microsherds and historic microartifacts. It discusses recognition criteria, evidence for human origin, and case studies in which they have been used. The paper also briefly presents the numerical methods by which these microartifact counts can be made comparable with macroartifact counts, and again a case example. (8)

Vaquer, J. (see Geddes, D. S.) (52)

Vehik, Susan C. (Oklahoma)

External Economies and Plains Village Adaptations.

Traditional discussions of external economic activities among Plains Village populations have stressed village self-sufficiency along with an individual-based external exchange composed primarily of food-stuffs. Recent research has indicated that this view may be inaccurate and that specialized external economies may have been important aspects of southern Plains Late Prehistoric adaptations.

That evidence will be reviewed and the importance of external economies to southern Plains Late Prehistoric populations will be addressed through a detailed consideration of one of those economies. (45)

Vierra, Bradley J. (Laboratory of Anthropology, Santa Fe)

Archaic Hunter-Gatherer Mobility Strategies in Northwestern New Mexico.

Although a regional perspective for the study of past cultural systems has been advocated, there have been few attempts to identify regional hunter-gatherer mobility patterns. If lithic raw materials are collected incidentally during subsistence related movement (cf. Binford 1979), then the presence of nonlocal lithic types may provide a means for viewing transhumance patterns. Ethnographic data on the sizes of known hunter-gatherer annual ranges and overall territories, are compared with the distribution of intrusive material types on Archaic sites in northwestern New Mexico, to provide a perspective on regional land use patterns. (38)

Vierra, Robert K. (Nevada, Reno)

Archaeological Measures of Varying Forager-Collector Strategies.

It has been recognized that hunters and gatherers employ a variety of short and long term adaptation strategies to survive in their environments. The distinction between foragers and collectors has proven to be a useful concept for characterizing hunter-gatherer subsistence-settlement systems. This paper attempts to show how assemblage composition, inter- and intra-site structure can be used to construct useful measures to monitor the dynamics of varying mixes of forager-collector strategies and changes in subsistence-settlement patterns. Both ethnographic and archaeological examples will be presented. (47)

Vincent, Anne S. (Berkeley)

Ecology of Root Use in Northern Tanzania.

Determination of the possible feeding opportunity of roots for early hominids can be studied on three levels: (1) the number of root species in general savanna and forest habitats may show the preferred habitats of this food source, (2) vegetation surveys in selected savanna habitats can reveal typical densities for this food source, and (3) detailed study of root use by the Hadza tribe of hunter-gatherers can show the level of exploitation that this food source can withstand, and its contribution to the overall diet. (37)

Vivian, R. Gwinn (Arizona)

Regional Conference Results from the Southwest.

This paper will consider the status of the Southwest Regional data base, standards and guidelines for the conduct of cultural resource management in a regional context, and interaction of regional planning with state and federal regulations and the State Plan process. (25)

Voorrips, Albertus (IPP, Amsterdam)

On the Relationships of Formal Models and Archaeological Theory: The Outlines of an Epistemology.

The status of formal and mathematical models in archaeology is discussed. Differences in the appraisal of models are based on differences between schools of archaeological thinking. An epistemology is proposed which assumes strong interaction between the development of formal thought and the perception of empirical reality and which considers the development and use of knowledge as a tool for survival and adaptation. Based on this epistemology, an outline of both the form of useful archaeological theory and model as well as the relationship between them is presented. Formal models are shown to be necessary steps toward the articulation of archaeological theory. (9)

Voss, J.A. (see Galloway, P.K.) (49)

Voss, Jerome A. and Robert L. Young (Southern Mississippi)

Stylistic Change as a Function of Social Identity.

Archaeological models of stylistic behavior commonly utilize an implicit, static, and often simplistic understanding of individual social identity. As developed in this paper, a model of style which employs social identity as a central explanatory concept provides a synthesis for previous models of style, emphasizes the dynamic component of style, and considers style in specifically archaeological terms as a cultural feature linking the contexts of artifact manufacture, use, and deposition. Test implications derived from this model are assessed through the analysis of the design variability of ceramics from the early historic period in the American Southeast. (16)

Voytek, Barbara (Berkeley)

The Organization of Production During the Balkan Neolithic.

This paper examines variation in the organization of production during the Neolithic in Yugoslavia (ca. 4000-4500 B.C.) using the archaeological evidence for the exploitation of stone resources. It focuses

specifically on two aspects of the production process—the organization of labor and labor investment—and discusses how these factors can be studied in the archaeological record. A model is presented for socioeconomic change in these Neolithic societies which, although non-stratified, were not at all egalitarian in the organization of production, providing a dialectic for change and variation through time. (49)

Wagner, Gail E. (Washington, St. Louis)

Comparability Among Recovery Techniques.

Dry screening, water screening, and flotation are three commonly used recovery techniques that result in different kinds and amounts of artifacts. The use of any one of these techniques biases not only for the recovery of particular artifacts, but also *against* certain artifacts and can create a data base that is inadequate or misleading for answering the researcher's questions. As a result, comparability of data among sites has become a major interpretive problem. This paper presents examples of differences among recovery techniques and suggests methodological, analytic, and interpretive approaches to handling comparability of materials recovered by different recovery techniques. (53)

Waite, W. (41)

Wallace, H. D. (see Doelle, W. H.) (43)

Walters, G. R. (see Garza-Valdes, L. A.) (28)

Wandsnider, LuAnn (New Mexico)

Geomorphological Processes and the Integrity of Archaeological Remains in Dune Fields.

In order that the archaeological record be used most efficiently and fully, archaeologists must be concerned with the various natural processes which affect differentially the integrity of archaeological remains. Archaeologists have recently engaged in the experimental evaluation of such processes. This paper presents the preliminary results of another field experiment conducted in stable and active dune fields of New Mexico. Implications for evaluating the integrity of the surficial archaeological record are given. (26)

Waters, Michael R. (Arizona)

The Sulphur Springs Phase and Early New World Prehistory.

The Sulphur Springs phase of the Cochise Culture of southeastern Arizona has been a source of controversy for five decades. Geoarchaeological investigations of Whitewater Draw do not substantiate the claim that Sulphur Springs phase ground stone artifacts are associated with extinct megafauna, nor the hypothesis that Sulphur Springs phase artifacts are specialized plant processing tools of the Clovis Culture. Instead, radiocarbon dates from Whitewater Draw place the Sulphur Springs phase between 8,000-10,000 B.P., and possibly to 10,400 B.P. Evidence suggests that the Sulphur Springs people did not temporally overlap with Pleistocene megafauna except possibly during the terminal Pleistocene. (35)

Watson, Patty Jo (Washington, St. Louis)

Archaeological Interpretation 1985.

Archaeology is the only historical science that destroys its primary data in the process of recovering them. Hence, there has always been—and should always be—deep concern about the archaeological recording techniques and about the interpretation of archaeological data. The interpretive goals explicitly and implicitly sought by Americanist archaeologists vary significantly from individual to individual. At the disciplinary level they have also changed markedly over the past 50 years. In this paper I discuss some aspects of archaeological interpretation in the abstract, and then compare interpretive themes or schools in Americanist Archaeology ranging from archaeology as chronicle to archaeology as fable and metaphor. (14)

Way, J. Edson (Beloit)

Late Prehistoric Rock Shelters along the Canadian River, San Miguel County, New Mexico.

Archaeological fieldwork on the Chappell-Spade Ranch northeast of Tucumcari, New Mexico, has documented the presence of numerous rock shelter habitation structures constructed under overhangs of large free standing boulders and against cliff faces. Radiocarbon dating of charcoal from enclosed hearths assigns these structures to a late Early Plains Village (A.D. 1100-1450) temporal position. Floral, faunal, ceramic, and lithic assemblages indicate widespread contact to the east and west. The assemblage does not permit a clear assignment to any of the surrounding cultural foci of Texas or southern Colorado; however, alternative interpretations are presented. (45)

Weaver, D.E. (see Bruder, S.J.) (43)

Weaver, Donald E. Jr. (Museum of Northern Arizona)

Environmental Causality in Hohokam Archaeology: A Reassessment.

On the basis of recent data from contract work in the Phoenix Basin, and the Northern and Southern Peripheries, an environmental causality model for Hohokam, originally presented by the author in 1972, is reassessed. The resulting reassessment provides a pan-regional model for the Sedentary-Classic transition, subsequent development in the Classic period, and the Classic-Protohistoric transition. With emphasis placed on viewing the Hohokam as a regional system with associated exchanges of material items as well as ideas, environmental change, both natural and man-made, remains a strong possibility as a primary triggering mechanism for Hohokam cultural change. (58)

Webb, Esmee (London)

The Extent to which Faunal Remains in European Middle Paleolithic Cave Sites Reflect Human Activity: An Essay in Applied Taphonomy.

Work in eastern and southern Africa studying modern taphonomic processes of skeletal disarticulation and body part (non-)preservation, plus studies of non-human carnivore bone modification practices, has generated considerable data indicating the probable preservation potential of different skeletal parts in predatory animals and their prey, plus suggestive criteria for distinguishing human food debris from the activities of other carnivores. Application of these principles to fauna reported from Neanderthal sites suggests that much of this food debris is the product of non-human carnivore activity. (7)

Webster, D. L. (see Freter A.) (1)

Webster, David L. and AnnCorinne Freter (Penn State)

The Copan Rural Survey: Issues and Methods.

Despite 30 years of settlement pattern research in the Maya Lowlands, a major problem remains, the adequate recovery of information encompassing an entire Lowland Maya political domain. This problem stems from practical problems inherent in rural surveys and from difficulties in defining boundaries for large political units. Environmental circumstances in the Copan Valley have facilitated extensive survey over an area of about 130 km². The rural component of Late Classic Copan can now be compared with settlement data from the demographic core of the region to provide a more complete picture of a Maya political domain than available elsewhere. (1)

Wedel, W. R. (13)

Weir, Glendon H. (Texas A&M)

Pre-ceramic Plant Utilization on the Central Coast of Peru:

The Lomas of Paloma.

The preliminary results of archaeobotanical, coprolite, and palynological studies of the central coastal Peruvian site of Paloma suggest that increasing human utilization between about 7700-5000 B.P., degraded the site's fragile *lomas* resources environment, and that this degradation was human-induced rather than due to climatic factors. The site settlement pattern indicates increasing sedentism, and a shift to more intensive manipulation of some plants and exploitation of marine resources is registered. Ultimately, littoral and riverine resources appear to have become emphasized over those of *lomas* and arid floodplain settings with implications for the later emergence of social complexity outside the *lomas*. (42)

Wells, C. L. (see Fowler, M. L.) (28)

Wells, Susan J. (National Park Service, Tucson)

Archaic and Hohokam Settlement in the Eastern Tucson Basin.

Although an arbitrarily defined survey universe, a wide variety of archaeological sites are present in the Rincon Mountain Unit of Saguaro National Monument, Tucson, Arizona. In addition to artifact scatters and 31 habitation sites, there are rock shelters, masonry structures, large agricultural field systems, petroglyph locations and lithic quarries. Occupation from Archaic to Classic period Hohokam is in evidence. Archaic sites occur at the mouths of steep canyons. There is little evidence of early ceramic period occupation. Growth is greatest during the Rincon phase and includes isolated upland sites. A shift in population centers occurs during the Classic period. (3)

Weniger, Gerd-C. (Institut für Urgeschichte, West Germany)

Man and Environment in the Late Glacial of Southwest Germany.

The Magdalenian of southwest Germany has been chronometrically dated to a period of about 17,000-11,000 B.P. Chronological and archaeozoological data permit the delimitation of an early and

late period of human occupation. Late glacial grasslands provide excellent grazing conditions for a diverse ungulate fauna and hunter-gatherer subsistence was adapted to seasonal shifts of these faunal communities. Magdalenian settlement patterns feature seasonal residential mobility within 100-150 km., ranges as well as seasonal changes in activities and group sizes. (4)

Wenke, R. J. (15)

Wenke, Robert J. (Washington, Seattle)

Early Egyptian Cultural Complexity at Kom El-Hisn.

Explanations of the origins of cultural complexity in Egypt are based mainly on epigraphic sources and mortuary cult data. No rural Old Kingdom towns or villages have ever been systematically excavated. Excavations in 1984 at Kom el-Hisn in the West Delta provide significant information about the economic organization of the Old Kingdom, particularly regarding agricultural strategies and local craft production. This information is directly relevant to hypotheses about early "state" formation. Analyses of the artifacts suggests substantial alterations in traditional approaches to Egyptian artifact analyses. (55)

Weston, Timothy (Kansas)

Acculturation in the Upper Middle Missouri Valley as Reflected in Bone Tool Assemblages.

During the process of European contact, the Plains Village peoples of the Upper Middle Missouri experienced acculturation brought on by epidemic diseases and the introduction of new technology. This process can be traced through analysis of changes in bone tool assemblages from three carefully test excavated earth lodge villages located at the mouth of the Knife River. Acculturation is reflected in progressively greater modification of bone tools with metal through time, and the eventual replacement of many bone tool types with metal substitutes. (32)

Whalen, M.E. (24)

Whalen, Michael E. (Tulsa)

Settlement System Reconstruction in the Southwestern United States.

The paper uses two data sets collected by the author: a complete coverage survey in the Hueco Bolson of western Texas, and a sample survey in the Quemado area of west-central New Mexico. Each covered more than 60 square miles, and each recorded hundreds of sites in diverse environmental zones. Both studies indicate that there are types of settlement systems which lend themselves to interpretation based on sample surveys. Other settlement systems are argued to be such that interpretation based on sample survey data results in misconceptions of the adaptive strategies which settlement patterns reflect. (50)

Whallon, Robert (Michigan)

Simple Statistics.

With the focus primarily on the development or refinement of new and complex methods of statistical analysis, it is often forgotten that we normally can learn more about archaeological data, sometimes more accurately, with simple, descriptive statistics or techniques of data display. This will be discussed, stressing the rightful priority of these methods and techniques as our most useful quantitative tools. A few of the "tricks of the trade" and pitfalls in their use will be highlighted, and some comments will be made on the developing approach of "Exploratory Data Analysis" in statistics. (9)

Wheeler, Jane C. (Colorado) and Edward B. Dwyer (Rhode Island)

Animal Utilization in the Southern Highlands: Early Horizon to Early Intermediate.

Analysis of faunal remains from the site of Minas Pata, located in the Lucre Valley of the Department of Cusco, has provided information on the patterns of animal utilization practiced in the southern highlands during the Early Horizon and Early Late Intermediate Periods. Herding of llama and alpaca is documented at this site although alpaca was relatively rare. A comparative study of herding strategies practiced by the highland valley occupants of Minas Pata and the contemporary inhabitants of the sites of Qaluyu and Pucara located on the altiplano of the Lake Titicaca basin just to the south is undertaken. (42)

Wherry, D. (see Bailey, R.) (6)

White, Randall (New York)

Upper Paleolithic Assemblage Variation in the Perigord: Some Sampling Problems.

A crucial component of any regional study of prehistoric hunter-gatherers is the analysis of variation in the composition of lithic assemblages. De Sonneville-Borde's 1960 typological synthesis remains the baseline for our understanding of contemporaneous and temporal assemblage variation during the

Upper Paleolithic in the Perigord. Many of the "reliable" assemblages studied by De Sonneville-Bordes were derived from the excavations of Denis Peyrony. Peyrony's collection and curation biases raise serious problems for any study of the specifics of regional variation. (4)

Whitley, David S. (UCLA)

Style, Style Areas, and Southern Sierra Nevada Pictographs.

Recent literature on style emphasizes its importance in the expression of prehistoric group identity, suggesting that style is adaptive as an active factor in group cohesion. Ethnographic literature indicates that the manifestation of style is more complex. Ultimately the use of style reduces to cultural-historical classification, regardless of whether it is defined in cybernetic/communication theory terms or traditional art historical means. A study of pictographs from the southern Sierra Nevada illustrates these points. A factor analysis of 89 pictograph sites provides associational information useful for the construction of cultural-historical style areas, and the relationship these have with historic linguistic boundaries. (2)

Whitmer, A. M. (see Ramenofsky, A. F.) (40)

Whittaker, Fran H. (Washington, Seattle)

Subsistence from an Evolutionary Perspective.

Plant remains from archaeological sites have long been used to provide subsistence information. Although progress has been made in distinguishing cultural from natural specimens, other problems must be resolved before any evolutionary interpretations can be made. Sample comparability over long periods of time is one such consideration. Macrofossil remains from earth oven features in the mixed mesophytic forest region of the Eastern U.S. are used in an attempt to establish comparability. These data are considered over the entire sequence for a better understanding of subsistence changes within an evolutionary framework. (17)

Whittaker, J. C. (see Kamp, K. A.) (40)

Whittington, Stephen L. (Penn State)

Rural-Urban Differences at Copan.

A number of distinctions can be made between rural and urban sites at Copan. Two small rural sites excavated in the Bolas de Petapilla area of the Copan pocket differ from Las Sepulturas urban sites in population density, scale of architecture, density of trash middens, degree of reliance on food grown nearby, and type of manufacturing done. A study of rural and urban skeletons indicates that differences existed in quality of diet and types of disease stress. (1)

Widmer, R. (see Brown, K. L.) (30)

Widmer, Randolph J. (Houston)

Economic Specialization at Copan.

Much discussion has centered on the extent and nature of Classic Lowland Mayan economic specialization. However, until recently, data have not been collected to specifically address this question. Recent investigation at a late Classic Mayan patio group 9N-8 at Copan has yielded data which provide an initial characterization of the level of specialization. It appears that there is full time craft specialization in a few residences but this specialization is restricted to high status craft items for elites, probably related and residing in the same mound group, rather than for market exchange. (1)

Wilcox, D. R. (see Laczko, G.) (43)

Wilcox, David R. (Museum of Northern Arizona)

Hohokam Warfare.

As a causative factor in the evolution of Southwestern cultural systems, warfare has often been suggested and much disputed, but rarely has it been thoroughly evaluated in a systemic way on a regional or panregional scale. A recent synthesis of data on Hohokam ballcourts led to the perception that their distribution largely contrasts with that of fortified hills, perhaps implying that threat and counterthreat relations between regional populations had escalated by the Sedentary Period. The theoretical plausibility of this hypothesis is evaluated and several ways it may be tested are discussed. The implications for the interpretation of the Salado phenomenon are also considered. (43)

Wilcoxon, Larry R. (UCSB)

Prehistoric Marine Resource Use: A Behavioral Perspective from Southwestern Santa Cruz Island, California.

Recent archaeological research on southwestern Santa Cruz Island offers a unique opportunity to examine the regional evolution of a complex maritime hunter-gatherer economy between 6000 and

300 years ago. Analysis of faunal and artifact samples derived from discrete midden areas situated adjacent to habitation structures spanning this time frame allows the definition of long-term trends in marine resource use as well as the delineation of intra-site variability in human procurement and consumption behavior. The patterns evident in the archaeological record are examined in light of contemporary theories of environmental change, optimal foraging, and social evolution. (59)

Wilkinson, Richard G. (SUNY, Albany)

Prehistoric Health and Adaptation: Paradise Lost?

In several recent publications historians and ethnohistorians have claimed that pre-contact native American populations were well-nourished, disease-free, and therefore, perfectly adapted to their environment. Empirical evidence relative to pre-contact health status is available from a rapidly growing body of paleopathological research, and this evidence is used here to refute the "Paradise Lost" concepts. Data from two Late Woodland sites in the Northeast are presented to document in detail the health status of these pre-contact groups. These data are then compared with those of other studies to synthesize health and adaptation in prehistoric American populations. (2)

Willey, G. R. (1)

Willey G. R. (21)

Williams, Ishmael, and Christopher Carr (Arkansas)

Intra-site Spatial Analysis: Goals and Units.

The goals of intra-site spatial analysis are reviewed and broadened at each of two levels of inference: that of the event and that of the system. Units of behavior, units of archaeological variability, and units of analysis are distinguished, the latter two with the aid of concepts derived from Fourier analysis. The palimpsest nature of organization of archaeological records and the necessity of isolating singular or parallel formation processes prior to fine-grained spatial analysis is stressed. (9)

Williams, J. Mark (Georgia) and Gary Shapiro (Florida)

Beyond Environmental Explanations of Site Location: The Little River Site in the Oconee Province.

Archaeologists who employ environmental variables as determinants of Mississippian settlement patterns have met with considerable success. Unfortunately, this success has tended to draw attention away from other equally important determinants of settlement location. Among these are various kinds of social and political relationships (trade, competition, and alliance) that must have existed among societies as complex as were Mississippian chiefdoms. Recognition of a single late Mississippian polity in the Georgia Piedmont provides an opportunity to examine extra-environmental aspects of these societies. Excavations at the Little River site in 1984 were designed to address these aspects of Mississippian organization. (34)

Willig, Judith A. (Oregon)

PaleoIndian Occupation in the Alkali Lake Basin of South-Central Oregon: A Geoarchaeological Model of Early Postglacial Human Adaptation.

Over 90 PaleoIndian and 25 stemmed point artifacts have been recovered at the Dietz site (35LK1529) in a kilometer-long scatter on the shoreline of now-dry pluvial Lake Alkali. Geomorphic survey, paleolake stratigraphy, map/aerial photo research and the context and distribution of artifacts in relation to lakeshore features suggest a model of PaleoIndian occupation centered around a small shallow lake/marsh (60 cm deep) and a Western Pluvial Lakes occupation concentrated around a larger, transgressive lake (2 m deep). Reconstruction of early postglacial ecology and human occupation patterns in the basin can help test the hypothesis of early lakeside adaptation in the west. (35)

Wills, Wirt H. (Michigan)

Hunter-Gatherer Organization and Early Agriculture in the Southwestern United States.

Results of recent research in west-central New Mexico are presented which suggest widespread reduction in hunter-gatherer mobility and the development of discrete regional populations preceded the introduction of maize and squash to this region. Bat Cave and other early agricultural sites in the Mogollon highlands probably represent a late Archaic population expansion into previously unoccupied forest areas, rather than the product of ecological conditions favorable to cultivation. (36)

Wilmsen, E. N. (16)

Wilshusen, R. H. (see Kane, A. E.) (44)

Wilshusen, Richard H. (Colorado)

The Relationship Between Abandonment Mode and Artifact Assemblage in Pueblo I Anasazi Protokivas.

Pueblo I pit structures excavated as part of the Dolores Archaeological Project are examined to see if the effects of use, abandonment, and post-abandonment events on artifact assemblage composition

can be separated. In certain cases the effects of post-abandonment disturbance are minimal, and the effects of use and abandonment can be differentiated. There is significant artifact and feature patterning in some of these cases that suggest that some of these structures functioned as community religious structures by A.D. 875. The results also show a strong correspondence between structure use and mode of abandonment. (3)

Wilson, C. D. (see Blinman, E.) (44)

Wilson, David J. (Michigan)

The Santa Valley Project: Implications of Comprehensive and Systematic Regional Survey on the Peruvian North Coast.

The pioneering study of regional settlement patterns was conducted over 35 years ago in the Viru Valley, although few if any coastal studies since that time have achieved even the incomplete but region-wide coverage of the Viru survey. The 1979-80 Santa Valley Project is the first attempt to achieve 100% coverage of a Peruvian coastal valley region. Given the unique conditions of site preservation, this paper outlines the critical advantages of comprehensive coverage and details site mapping in providing the basis for throwing new light on the role of irrigation agriculture, population growth, and warfare in the origins of complex society. (50)

Windses, Thomas C. (National Park Service, Chaco Center) and William Doleman (New Mexico)

Small House Population Dynamics During the Bonito Phase in Chaco Canyon.

A part of what is perceived as the economic, social and political organization of the Chacoan Phenomenon is dependent upon our estimation of the population present during the height of the Classic Bonito Phase (A.D. 1050-1100) in Chaco Canyon, northwestern New Mexico. A reexamination of small site ceramic assemblages in Chaco through multidimensional scaling techniques, with the results verified against chronometrically dated ceramic assemblages, has suggested that contrary to most projections population had leveled off or decreased during the Classic Period. Thus, a population rise cannot be considered a causal factor in the eventual decline of the Chacoan system. (3)

Wing, Elizabeth S. (Florida State Museum)

Use of Animals by the Inca With Special Reference to Huanuco Pampa.

The remains of native herd animals (camelids) are overwhelmingly predominant at the Incan site of Huanuco Pampa. Analysis of the age distribution of the animal population and the size ranges of these animals provides insight into the herd management practices of the Inca. Spanish occupations of a portion of the site and the introduction of European domesticates show the effect of Spanish cultural and animal husbandry on traditional herding practices. (42)

Winter, J. (see Hoffman, C. A.) (40)

Winterhalder, B. C. (17)

Winterhalder, Bruce B. (North Carolina)

Optimal Foraging: Diet Breadth in a Stochastic Environment.

Simulation studies using foraging models and stochastic inputs for environmental parameters indicate that optimal prey choice in an unpredictable environment is like that generated from simple deterministic models which assume a normative environment. Risk minimizing and efficiency maximizing goals appear to have similar behavioral solutions. In the stochastic situation even the optimal choice entails larger fluctuations in food intake, unless group level sharing occurs. These results increase confidence in foraging model hypotheses, they extend the models to quantitative analysis of risk and exchange. (47)

Wise, Karen and Mark Aldenderfer (Northwestern)

Pre-ceramic Puna-Sierra Interrelationships in the South-Central Andes.

Recent archaeological investigations in the sierra and puna of the Departments of Moquegua, Tacna, and Puno, southern Peru, have revealed important relationships between sites found in these two major environmental zones. Three lines of evidence form the basis for this interrelationship: (1) lithic raw materials between the zones, (2) overlap in artifact style and type, and (3) similarities in design elements of cave and rockshelter art. Although the nature of interrelationship implied by these data are not yet fully understood, the implications of a series of models concerning human land use during the pre-ceramic in the south-central Andes—ranging from modified sedentism strategies to complete trans-humanance models—will be compared against the data, to provide a tentative solution to the question. (28)

Wolf, Phyllis, Kenneth L. Petersen, and G. Timothy Gross (Dolores Archaeological Program)
Storage in Dolores Anasazi Prehistory, A.D. 600-980.

Population growth and climatic stress (variability in precipitation and growing season length) in the Dolores Project area lead to predictions of increasing agricultural intensification for the A.D. 840-900 period. Concurrent increase in storage capacity is expected, and storage requirements are simulated using per capita consumption estimates, potential yields, and storage cycle length. Trends in measured storage volume are compared with the simulations, and potential surplus storage is discussed in light of possible exchange and social organization implications. (44)

Wolfe, W. (see Johnson, R. A.) (46)

Wood, J. Scott (Forest Service) and John W. Hohmann (Arizona State)
Foundation's Edge: Entrepreneurial Trade and the Development of the Hohokam Classic Period.

The pre-Classic to Classic Period transition within the Hohokam tradition is seen as involving the behavioral dynamics of participation in regional exchange networks which developed after the end of the pre-Classic. These networks developed out of the denouement of old monopolies and an increase in the number of competing population centers and markets, conditions favoring growth in such peripheral Hohokam areas as the Tonto Basin and development of such distinctive new cultural traditions as Salado. The rapidity of change seen in the Hohokam core area and its peripheries can best be explained using a model of punctuated equilibrium and entrepreneurial expansion. (43)

Wood, W. Raymond and Michael J. O'Brien (Missouri, Columbia)
The Impact of Federal Archaeology in the American Midwest.

Implementation of the federal archaeology program has contributed significantly to our understanding of prehistoric cultural development and change in the American Midwest. In addition to numerous small-scale projects that are ubiquitous in any region of the United States, the Midwest has hosted several long-term interdisciplinary programs that have made solid contributions to the study of Holocene cultural dynamics. Many of these programs—logical extensions of on-going studies—have incorporated successfully the dictates of federal archaeology into existing comprehensive research designs. Despite these accomplishments, there are growing problems in the Midwest that if left unchecked will seriously undermine future archaeological research. (18)

Woodall, J. Ned (Wake Forest)
Regional Conference Results from the Southeast.

This paper will consider the status of the Southeast Regional data base; standards and guidelines for the conduct of cultural resources management in a regional context; and interaction of regional planning with state and federal regulations and the State Plan process. (25)

Woodbury, R. B. (18)

Woods, W. I. (see Fowler, M. L.) (28)

Workman, William (Alaska)
Regional Conference Results from Alaska and Northern Canada.

This paper will consider the status of the Alaskan and Northern Canadian data bases; standards and guidelines for the conduct of cultural resources management in a regional context; and interaction of regional planning with state and federal regulations and the State Plan process. (25)

Wormington, H. M. (13)

Wright, G. A. (see Bender, S. J.) (32)

Wright, Henry T., III (Michigan)
The Evolution of Civilization.

During the past quarter century there has been a fruitful interaction between archaeologists' developing understandings of the evolution of civilizations and their use of intensive regional survey approaches. We can now begin to evaluate synthetic or multivariate explanations of state and urban development with a diversity of new regional data from Mexico, Peru, Mesopotamia, and the Indus. Such an attempt, at minimum, serves to emphasize disparities in the available evidence from each area, new possibilities for research to increase comparability, and needs for new forms of international cooperation and funding if such research is to be undertaken. (14)

Wright, J. V. (National Museum of Man, Ottawa)
Archaeological Cartography and the Historical Atlas of Canada.

The Historical Atlas of Canada is a three volume atlas focusing on the social and economic history of Canada which should be available in 1986. Included in Volume I are an introduction to the prehistory

of Canada and 14 maps which pertain to prehistory. These maps consider the following: Early PaleoIndian, Fluted Point People of Southern Ontario, Late PaleoIndian, four chronology maps covering the periods 8000-4000 B.C., 4000-1000 B.C., 1000 B.C.-A.D. 500, and A.D. 500-European contact, the peopling of the High Arctic, Trade, Bison Hunters of the Plains; Iroquoian Agricultural Settlement, Exchange Systems on the north coast of British Columbia; Population and Subsistence; and Cosmology. The presentation considers various facets of the archaeological cartographic exercise. (22)

Wyckoff, Don G. (Oklahoma Archeological Survey)
The Good, The Bad, and The Ugly: The Impacts of Federal Archaeology in Oklahoma.

Two decades of federally supported archaeological work in Oklahoma have stimulated an array of results. From 1934 to 1972, such programs supported the discovery and excavation of many threatened sites, resulting in substantive information on cultural sequence, assemblage composition, site layouts, settlement practices, and chronology. Essentially 99% of this work was accomplished by archaeologists affiliated with the University of Oklahoma, a factor which contributed to the monolithic, but effective and productive, management of Oklahoma's cultural resources. After 1972, the steadily increasing enforcement of federal environmental protection laws stimulated the florescence of projects needing archaeological expertise, exceeding that of the few state-employed archaeologists. The increased role of archaeologists with federal and private agencies contributed to a noticeably decreased quality and amount of archaeological work, which, in turn, resulted in some shoddy reports, losses of information, a waste of tax dollars, and a notable alienation of some citizen support for Oklahoma archaeology. But there have been, and are, some projects that have contributed positively, especially through multi-disciplinary studies of human adaptations to past environments. Axiomatically, these projects have involved the cooperative effort of federal, state, contracting, and even amateur archaeologists who have worked diligently to see that the archaeological resources were responsibly studied. (18)

Xu, Q. (see You, Y.) (47)

Yerkes, Richard W. (Ohio State)
Stone Tool Function and Social Differentiation in the Mississippian Settlement at Labras Lake, Illinois.

Small Mississippian sites that are dispersed over the American Bottoms are called farmsteads or hamlets. It is believed that the "farmers" who inhabited these sites grew the crops that fed the elite who resided at the temple towns in the Cahokia settlement system. This interpretation is based on the distribution of artifacts on the surface of small Mississippian sites and on assumptions about tool function based on morphology. A more detailed investigation of Mississippian social organization examines the spatial distribution of household units and the activities that are associated with each unit. Microwear analysis of lithic assemblages from the seven household units at the Labras Lake site provide data that were used to investigate social differentiation at the locality and consider its relationship to the Cahokia settlement system. (57)

Youn, Yu-Zhu, Qin-Qi Xu and Yi Li (IVPP, China)
Seasonality and Site Structure Study of the Late Paleolithic from Northeast China.

Two late paleolithic sites were discovered recently in northeast China. At Yianjia Gang, an open-air campsite dated 22,730 ± 300 B.P., a semi-circle of faunal remains was found surrounding a concentration of organic debris which could be the remains of a windbreak and enclosed living floor. Anatomical part frequencies and breakage patterns indicate differential utilization of juvenile and older individuals of horse and bison. At Bulong Shan Cave Site excavators unearthed 250 horses from strata dated 17,160 B.P. Eruption, wear, and growth patterns in 6000 cheek teeth indicate that most of the horses were subadults, possibly killed during the summer. Two different adaptive strategies may have been adopted. (47)

Young, R. L. (see Voss, J. A.) (16)

Zalucha, L. Anthony (Paleoethnobotanical Consulting)
Vegetational Reconstruction Based on Charcoal.

Since archaeological charcoal reflects formerly significant floristic elements, it is extremely useful in reconstructing past vegetation. Contrary to common practice, the nature of its formation, deposition, and preservation means that charcoal should be interpreted on a presence-absence basis. Grounded in the intensive sampling of as many fire-related contexts as possible, this approach treats site charcoal as an assemblage of taxa. The strategy seeks to identify plant communities rather than positing probably spurious species commonness based on specimen counts. The procedure thus minimizes interpretational errors due to cultural selection. The method is illustrated with a Mississippian example from Missouri. (19)

Zaslow, Bert and Owen Lindauer (Arizona State)**Anasazi Influence on Post-Sacaton Hohokam Decorations.**

Sacaton R/B, post-Sacaton R/B, Tularosa B/W, and St. Johns Polychrome ceramic decorations are examined with respect to primary line work, symmetry, geometrical color relationships and design style of embellishment. A comparison utilizing design style, pattern truncation and use of upper triangular areas between Sacaton and post-Sacaton pgg-type patterns reveals that the latter, during ca. A.D. 1100-1200, become similar to patterns from the Upper Gila area. Contact and network exchange between Anasazi and Hohokam groups are indicated for the early Classic period, with an Anasazi-to-Hohokam direction of influence. (43)

Zeidler, James A. (Politecnica Litoral, Ecuador)**Household Production in Valdivia Society: Implications of House Size Variability and Domestic Activity Patterning in the Phase 3 Dwelling.**

After briefly defining the Valdivia house and "household," this paper analyzes architectural variability and domestic economy of the Phase 3 household at Real Alto within the broader temporal context of village growth and settlement expansion occurring between Phases 1 and 7. On the basis of activity patterning and artifact variability in Phase 3 house floor deposits, an attempt is made to locate the extended family household within the larger labor process of Valdivia society. It is argued that a major organizational shift in household size and complexity occurred between Phases 1 and 3 directly related to concomitant changes in the social relations of productions, whereby an initial process of household competition led to progressive production intensification and emergent social ranking. (48)

Zhou, Guo-Zing (Beijing, China)**A Case Study of Subsistence Strategies of Late Paleolithic/Holocene Transition.**

Biliandong, a cave site (E 109° 20', N 24° 15'), in south China was found in 1956 and re-excavated during 1982-83. Cave deposits which contain cultural remains were dated from Late Paleolithic to Early Holocene. Early Phase (30,000 B.P.) is characterized by more pebble tools and flint-made small tools; most fauna are all extinct species. Those evidences indicate hunting and gathering may be their main mode of subsistence. The Late Phase (7500 B.P.) has more polished axes and perforated pebbles as well as early ceramics; while fauna are all modern types. This may suggest the beginning phase of agriculture. The cave site may hold the key to unfold the evolution of subsistence strategies in south China and further relationships with Hoabinhian in southeast Asia. (47)

Zilhman, Adrienne (UCSC)**Before Stone Tools: Problems in Reconstructing the Distant Past.**

Archaeologists rely heavily on stone tools from Paleolithic times to provide clues about human behavior and adaptation. However, stone tools at 2my appear over one million years after the earliest hominid fossil remains at 3.5my. In the absence of stone tools, how does one proceed in reconstructing the human past? By carefully articulating assumptions, then using a range of data from molecular biology, primate behavior studies, and comparative anatomy, a theoretical framework can be created which limits the number of possible interpretations of the direct and indirect evidence. (51)

Zubrow, E. B. (see Reid, J. J.) (58)

Zurita, J. (see Limon, A.) (19)

Zvebil, M. (see Green, S. W.) (15)