

VI. Activities of Various Academic Gatherings Related to the History of Archaeology

TIME AFTER TIME: A HISTORY OF ARCHAEOLOGICAL DATING

**Symposium for the 62nd Annual Meeting of
The Society for American Archaeology**

**The Opryland Hotel
Nashville, Tennessee U.S.A.**

April 2-6, 1997

SYMPOSIUM ABSTRACT

This symposium presents historical reviews of the development, application, and analytical impact of seven important dating techniques on North American archaeology and the interpretation of that prehistory. Critical reviews of seriation and stratigraphy, dendrochronology, and radiocarbon, obsidian hydration, archaeomagnetic, and luminescence dating, are presented. The concordance between tree-ring dates and the historical record is examined, and a sociologist of science considers how these dating techniques affect histories of the discipline as a whole. A critical examination of archaeological chronology and chronometry will lead to improved interpretations of temporal relationships and dates in future archaeological analyses.

Organizer and Chair: Stephen E. Nash

Symposium Participants:

Beck, Charlotte (Hamilton College) Blinman, Eric (Office of Historical Studies, New Mexico) Croissant, Jennifer L. (The University of Arizona) Dean, Jeffrey S. (The University of Arizona) Eighmy, Jeffrey (Colorado State University) Feathers, Jim (The University of Washington) Jones, George T. (Hamilton College) Nash, Stephen E. (The University of Arizona) Stein, Julie (The University of Washington) Taylor, R.E. (The University of California-Riverside) Towner, Ronald H. (The University of Arizona)

Introduction: The Surprisingly Short History of Archaeochronology.

Jeffrey S. Dean and Stephen E. Nash

The examination of temporal relationships differentiates archaeology from the other subdisciplines of anthropology, and from other social sciences, yet chronological analysis has a relatively short tradition in American archaeology. Over the last eight decades, however, archaeologists have developed or adopted new dating techniques at the rate of about one technique per decade, such that today a suite of methods may be used to date events of archaeological interest. The time is ripe for a critical appraisal of how these dating techniques have impacted the practice of American archaeology and the interpretation of North American prehistory.

Stratigraphic Dating: The Road to Riches and Ruin.

Julie Stein

The use of superpositional layering to date archaeological material gained popularity in archaeology in the early twentieth century, yet stratigraphy as a discipline began in 1669 with Steno, and has continued within a separate history beyond its uses in archaeology. The "ruin" of archaeology occurred when archaeologists infused terms relevant to cultural and artifactual concepts into their stratigraphy, without following the principles and guidelines of stratigraphy as a whole. Stratigraphic principles can help archaeologists unscramble the confusion associated with terminology central to dating, such as phase, component, and period, and lead us from ruin toward "riches."

The Foundations, Contributions, and Limitations of Ceramic Dating.

Eric Blinman

For a century, archaeologists have exploited patterns of ceramic change to build cultural chronologies. Patterns are expressed in a tremendous variety of stylistic, technological, and functional attributes, and change is calibrated through stratigraphy, seriation, and other dating methods. Often described as a relative dating technique, ceramic date estimates are usually tied to absolute time scales with both high degrees of accuracy and precision. Through the sheer abundance of pottery in many prehistoric contexts, ceramic dating is more widely applied than other techniques, especially in non-excavation contexts. However, there are practical and theoretical limits to its application and interpretation.

Tree-Ring Dating and Interpretations of North American Prehistory.

Stephen E. Nash

In December of 1929 A.E. Douglass published precise Christian calendar dates for over forty prehistoric sites across the American Southwest. Archaeologists were immediately forced to reconsider their interpretation of the archaeological record. The 1930s saw the expansion of archaeological tree-ring dating to new areas and time periods. A synthesis of tree-ring dates during the 1960s standardized the practice of archaeological tree-ring dating. An increasingly sophisticated body of interpretive theory developed over the last 60 years has allowed archaeologists to conduct more refined dendrochronological analyses. The impact of these developments on North American archaeology and prehistory is examined.

The Introduction of Radiocarbon Dating in American Archaeology.

R.E. Taylor

Five decades ago radiocarbon dating provided for late Pleistocene and Holocene time a common chronometric scale of worldwide applicability. Chronological relationships could now be derived independently of assumptions about cultural processes. It has been argued that this resulted in the redirection of effort from chronology building to theory building (Binford), led to a noticeable improvement in archaeological field methods (Johnson), was a major impetus for interdisciplinary and contextual studies in archaeology (Butzer), and moved archaeologists increasingly to direct attention to analytical and statistical approaches in the manipulation and evaluation of archaeological data (Thomas). The validity of these suggestions is examined.

Thirty Years of North American Archaeomagnetism.

Jeffrey Eighmy

Thirty years have past since National Geographic published the first article on archaeomagnetic dating in North America. During that time significant progress has been made in the technique. The number of trained collectors has grown tremendously, the number of magnetometers available for use has increased to at least four; the quality of reference curves has improved, and new analytical methods have been introduced. Two challenges remain: One is getting archaeomagnetism systematically introduced into research programs outside the Southwest. The other is the training of the next generation of archaeomagnetists.

Obsidian Hydration Dating, Past and Present: Its Impacts on North American Prehistory.

Charlotte Beck and George T. Jones

First presented in 1960, obsidian hydration dating has become widely used in areas such as the American west where obsidian is plentiful in the archaeological record. A number of issues have since been debated, including the effects of temperature, chemical composition, and humidity on the rate of hydration, and the validity of the method as a numerical-age approach. Obsidian hydration dating was one of the first approaches that dates the archaeological "target" event, eliminating the necessity for associational arguments. Further it allows dating of surface assemblages, without which we have a much poorer understanding of prehistory.

A Consideration of Luminescence Dating in Archaeology.

Jim Feathers

Luminescence dating has never gained wide popularity in American archaeology. This stems in part from a lack of understanding of the complexity of the technique, as well as disappointing results in early work that led to a loss of confidence in the technique. A larger reason for the underutilization of luminescence dating is a poorly developed dating theory. Luminescence can provide direct dates for archaeologically relevant events and avoids the association problem that plagues many dating techniques. Appreciation for the potential of luminescence dating should lead to its selection for resolving certain kinds of archaeological questions.

Dendrochronology and Historical Records: Concordance and Conflict in Navajo Archaeology.

Ronald H. Towner

Dendrochronology and historical records are the most precise dating methods available for studying the recent past and have been intertwined since dendrochronology's beginnings. Historical records have provided the only independent means of verifying tree-ring dates; dendrochronology, on the other hand, has often confirmed historical reconstructions. Using Navajo archaeology as a case study, however, shows that tree-ring dates are utilized only if they agree with Euroamerican documents. Only recently have archaeologists begun to evaluate the biases Euroamerican documents, rely more on empirical evidence, and incorporate Navajo traditions into new theoretical models of cultural interaction and ethnogenesis.

Narrating Archaeology: Historiography of Archaeology and the Sociology of Knowledge.

Jennifer L. Croissant

Histories are shaped by questions internal to disciplines, limited by available records, and constituted by scholarly conduct. Historiography is a way of re-telling disciplinary histories, a means of uncovering the biases of prior stories about the field, of inducing reflexivity about the goals and directions of a discipline, and of revealing neglected problems worth investigation. The historiography of archaeology provides resources for the sociological investigation of archeological knowledge, and insights into the power of narrative in developing and sustaining professional and intellectual communities.

Discussant: Dr. Dena Dincauze, University of Massachusetts-Amherst

Readers of the BHA will find interesting the content of a conference held at the American Philosophical Society in Philadelphia, Pennsylvania in March 1997:

SURVEYING THE RECORD: NORTH AMERICAN SCIENTIFIC EXPLORATION TO 1900

A Conference of The American Philosophical Society

14-16 March 1997
Benjamin Franklin Hall
427 Chestnut Street, Philadelphia

Session 1: Welcome and Overview

Edward C. Carter 11 (American Philosophical Society) "Welcome"
John L. Allen (University of Connecticut) "Where We Are and How We Got There"

Session 2: The Cartographic Record

Chair: John L. Allen (University of Connecticut)
John Rennie Short (Syracuse University) "A New Mode of Thinking"
Clifford Nelson (United States Geological Survey) "Completing a Reliable Geologic Map of the United States"
Michael Kowalewski (Carleton College) "High Terrain: John Muir, Clarence King, and the Geological Sublime"

Session 3: Oceanic Exploration

Chair: Harold D. Langley (Catholic University of America)

Elizabeth Green (Indiana University) "Science as a Landed Activity"
Barry Alan Joyce (San Diego State University) "Elisha Kent Kane and the Eskimo of Etah: 1853, 1854, 1855"
Dean C. Allard (Naval Historical Center) "Spencer Baird and the Scientific Exploration of the North Atlantic"

Session 4: The Artist as Explorer, The Explorer as Artist

Chair: Elizabeth Johns (University of Pennsylvania)
Kenneth Haltman (Michigan State University) "Geologic Landscape Paintings by Samuel Seymour"
Katherine Manthorne (University of Illinois Urbana-Champaign) "Image as Text: Reading Expeditionary Art"
Ron Tyler (Texas State Historical Assoc.) "Illustrated Government Publications Relating to the American West"
Debora Rindge (New Mexico State University) "Science and Art Meet in the Parlor: The Role of Popular Magazine Illustration in the Pictorial Record the Great Surveys"

Session V: 1:00 - 2:45 p.m. Lewis and Clark

Chair: Gary E. Moulton (University of Nebraska-Lincoln)
Gunther Barth (University of California at Berkeley) "The Roles of Alexander Mackenzie and Meriwether Lewis during the Final Searches for the Northwest Passage"
Albert Furtwangler (Mount Allison University) "Do or Die, But Then Report and Ponder: Palpable and Mental Adventures in the Lewis and Clark Record"
Gary Moulton, "Reconstructing the Herbarium of the Lewis and Clark Expedition: New Discoveries"

Session 6: Exploration and Anthropology

Chair: Anthony F. C. Wallace (University of Pennsylvania)
Don Fowler (University of Nevada) and David Wilcox (Museum of Northern Arizona) "From Thomas Jefferson to the Pecos Conference"
Richard Veit (Monmouth University) "Montroville Wilson Dickeson, Pioneering American Archaeologist"
Douglas Cole and Alex Long (Simon Fraser University) "Surveying, Salvaging—or Savaging?—the Indians"

Session 7: Works in Progress

Chair: Howard R. Lamar (Yale University)
Howard Lamar "Stephen H. Long's 1820 Expedition: Responses to Native Americans"
Marc Rothenberg (Joseph Henry Papers) "The Smithsonian Institution and Scientific Exploration, 1846-1878"
Lisa Strong (Columbia University) "Collecting Oneself: Karl Bodmer, Alfred Jacob Miller and the Indian Sketch Collection"
Ben Huseman (Amon Carter Museum) "New Research on John James Young, Enigmatic Government Expeditionary Artist and Draughtsman"

Donald C. Dahmann (U.S. Department of Commerce) “Placing the Career of the Geographer Henry Gannett (1846-1914) in a Context That Relates to Our Own Time”

Session 8: A Biography of Explorers

Chair: Edward C. Carter 11 (American Philosophical Society)

J. Donald Hughes (University of Denver) “The Discovery of Biotic Communities: C. Hart Merriam and his Russian Compeers”

Mathew Godfrey (Brigham Young University) “Traversing the Fortieth Parallel: The Experiences of Robert Ridgway, Teenage Ornithologist”

James Fleming (Colby College) “The Mexico Boundary and the Boundaries of Science: Jean Louis Berlandier and the Politics of Exploration”

Session 9: New Dimensions of Exploration Studies

Chair: James P. Ronda (University of Tulsa)

Donald Worster (University of Kansas) “The Second Colorado River Expedition: John Wesley Powell, Mormonism, and the Environment”

Lucy Jayne Kamau (Northeastern Illinois University) “What Constitutes Science? William Maclure, The Academy of Natural Sciences, and the Nature of Science in the Early Republic”

Brad D. Hume (Indiana University) “The Romantic AND the Technical in Early Nineteenth-Century American Exploration”

James P. Ronda “Looking Backward — Looking Forward: Thoughts on the Meaning and Contributions of Surveying the Record”