

**ABSTRACTS**  
**42nd ANNUAL**  
**NORTHWEST ANTHROPOLOGICAL**  
**CONFERENCE**



**March 23-25, 1989**

**Ridpath Hotel**  
**Spokane, Washington**

**Sponsored by:**  
**Eastern Washington University**

**Registration:** Registration is required for attendance at all sessions. The conference registration desk in the lobby of the Motor Hotel will be open:

Wednesday, March 22 7:00 p.m. - 9:00 p.m.

Thursday, March 23 7:00 a.m. - 5:00 p.m.

Friday, March 24 8:00 a.m. - 5:00 p.m.

Saturday, March 25 8:00 a.m. - 11:00 a.m.

**Information/Messages:** Conference and Spokane information will be located at the conference registration desk in the lobby immediately outside the meeting rooms. A message board will be set up nearby.

**Banquet:** Friday evening a no-host cocktail hour at 6:00 p.m. will precede the banquet in the ballroom. Banquet reservations must be made at the conference registration desk by Thursday evening.

**Reception:** A conference reception with light refreshments will be held at Cheney-Cowles Memorial Museum, Thursday evening from 5:30 to 7:00. The museum is located at W. 2316 First Avenue.

**Exhibits:** Book displays and presentations by exhibitors are located in Legend Room A, open daily from 8:00 a.m. to 5:00 p.m.

**Smoking:** Smoking is not permitted in meeting rooms.

**Jerry R. Galm**  
Conference Chairman

**S.A.C. Keller**  
Program Chairman

*Cover photo: Echo Flour Mill and the Spokane Falls (courtesy of Eastern Washington State Historical Society).*

## Abstracts of Symposia

### **Ethnohistorical Research in the Northwest**

**DANIEL L. BOXBERGER** Western Washington University

The papers in this symposium explore some of the current trends in ethnohistorical research in the Northwest Coast and Plateau culture areas.

### **The Association of Oregon Archeologists: Papers on Oregon Archeology**

**THOMAS J. CONNOLLY** Oregon State Museum of Anthropology

**BRUCE M. CRESPIAN** Bureau of Land Management

The Association of Oregon Archeologists is a non-profit scientific and educational organization dedicated to the protection and enhancement of prehistoric and historic archaeological sites. This symposium is a collection of papers representing some of the work currently being done in Oregon by archaeological contractors, Federal agencies, and universities. The papers cover a wide range of topics, geographic areas and cultural areas within the state of Oregon.

### **Status of Native American Burial Sites and Collections in Washington State**

**STEVEN HACKENBERGER** Central Washington University

Summary data are given for burial sites and osteological collections. Preliminary inventory of WARC site records indicates some 600+ suspected burial locations. Summaries are given for university held collections. Recent and future directions in osteological analysis are presented which address archaeological and anthropological problems. Discussion following papers will highlight the history and future of Pacific Northwest osteology and mortuary archaeology. Attention will be focused on special needs such as burial protection, scientific and cultural benefits of collection analyses, and long-term storage of collections by tribes and institutions.

### **Recent Research in Southern Georgia Strait**

**DAVID JOHNSTONE** Simon Fraser University

This symposium acts as a forum to allow for the presentation of the results of research from four projects undertaken in the last two years within this sub-region.

### **Rock Art: New Approaches to the Study of Prehistoric Symbolism**

**JAMES D. KEYSER** United States Forest Service

**KEO BORESON** Eastern Washington University

Rock art sites can provide information not found in other types of archaeological sites such as insights into the mythology, religion, world view, and cosmology of the people who painted or carved these figures. They can also provide more traditional archaeological data such as migration and land use patterns. The papers in this symposium utilize rock art sites from various areas of the world to present some results from both aspects of inquiry.

### **Sacred Sites Archaeology**

**LAWR V. SALO** United States Army Corps of Engineers

“Sacred sites archaeology” pertains to archaeological investigations of cultural resource sites that are regarded by contemporary local/regional Indian tribes (or other ethnic groups) as important in the maintenance of traditional culture or religion. The problem for archaeologists and state/federal land managers is how to manage these kinds of sites in the course of government programs. This session is intended to provide a face-to-face exchange of views among Indian tribes, archaeologists, and state/federal land managers.

### **Historic Forts of the Pacific Northwest**

**BRYN THOMAS** Eastern Washington University

This symposium will discuss various aspects of 19th century civilian and military forts in the Pacific Northwest.

## Abstracts of Papers and Exhibits

### **CAROL J. AGARD** United States Forest Service

**A Preliminary Report on Over-Snow Logging of Obsidian Quarry/Workshop Sites**

The Cold Springs timber sale is a 1600 acre sale with over 1000 acres of observable surface obsidian. Six of 17 recorded sites are quarry/workshop sites in designated timber sale cut units. In order to protect these sites and allow for timber harvest activities, a plan for over-snow logging was implemented. This study will examine: the “Over-snow Logging Mitigation Plan” developed by Malheur National Forest timber staff and approved by the Oregon SHPO, the logging systems used to implement the plan, and the preliminary results of over-snow logging on three quarry/workshop sites.

### **KENNETH M. AMES** Portland State University

**DORIA RAETZ** Portland State University

**The 1987-1988 Excavations at the Meier Site**

The Meier Site, located in the Portland Basin, has been the focus of excavations by Portland State University’s field school during the past two summers. While as much as 30% of the site may be completely destroyed by collector’s excavations, the remaining deposits are in excellent condition. Approximately 3,000 artifacts have been recovered. These are associated with a series of complex pit, hearth and floor features which we believe represent a sequence of superimposed plank house floors. The floors probably date to the last millennium.

**MICHAEL ASHKENAZI** Ben Gurion University/University of Calgary  
**Traditional Small Groups Management in Modern Japan**

The argument about the "uniqueness" of Japanese management forms is far from over. This paper is an attempt to demonstrate that several different managerial models are available to modern Japanese. These are found (and practiced) in modern Japan in settings that include local neighborhood government and festival management. Some of these local managerial forms are described here, as well as the degree of their accessibility to modern Japanese. I also discuss the prerequisites of different managerial forms and show how they affect and are affected by their social setting.

**KATHRYN BERNICK** University of British Columbia  
**Baskets from the Year 2000 BP**

Marpole-aged perishable artifacts were recovered last summer from the Water Hazard wet site (DgRs-30) in Tsawwassen, B.C. Technological and stylistic attributes, particularly of the basketry, indicate similarity to the contemporaneous-or-older collection from the Biederbost Site (45SN100) near Seattle. Similarity to other perishable assemblages from the Coast Salish area, both older and younger, is less marked.

**FRANK B. BESSAC** University of Montana  
**The Isoma and Curing Ceremony at Shangtu - Parallelism and Mirror Image**

This paper will concern the juxtaposition of two healing ceremonies, one, the Isoma ceremony of the Ndembu of South Central Africa described by Victor Turner, the other, a shamanistic ceremony I observed in Shangtu, Inner Mongolia in 1948. Where the former emphasized the evil influences of neglected matrilineal kin, the latter concerned patrilineal kin. The former sought treatment resulting in coolness, the latter in generating heat. Thus, even though these ceremonies were performed in very different cultural settings, they can in many respects be seen as mirror images of each other.

**GREG BETTIS** Rock Art Research Education  
**Preservation of Prehistoric Indian Writings (Video)**

Oregon has a rich variety of Indian rock writings. Due to their accessibility, many of these sites have been affected by vandalism. In a videotaped film, the conservation of a Bend, Oregon, rock art site is documented. The removal of chalk, spray paint and charcoal applied over and near the Indian pictographs by vandals is demonstrated. Camouflage techniques used to cover scratches applied to the panel are also demonstrated. The 30 minute film, produced by Rock Art Research Education and by the Portland Cable Access T.V. Company, was done with the cooperation and help of the landowners and the Confederated Tribes of the Warm Springs Indians. The film was produced to help educate both the professional community and the general public to the need for conservation of Indian rock art. It also demonstrates that restoration of these fragile archaeological sites is possible and can be extremely successful. The three days of conservation work applied to this unique central Oregon pictograph site is the first effort of its kind in the state.

**MARIA BILLINGS** Western Washington University  
**An Analysis of the Use of Historic Photographs as Ethnographic Data**

The use of photographs as a method of ethnohistorical research has not been fully explored. Many researchers use photographs, but few examine the context in which the photographs were taken. Certain factors must be taken into consideration when using a photograph or a corpus of photographs for research purposes. For example, an understanding of the technological limitations of the equipment used is significant. Also important is a knowledge of the photographer and purposes for taking the pictures. It is critical that each photograph be viewed and analyzed in its own historical context.

**CATHERINE HOLDER BLEE** National Park Service/University of Colorado-Boulder  
**British Ceramics and Alaskan Deer: What Constitutes a Russian-American Artifact Assemblage?**

An archaeological excavation of a trash pit used by the occupants and patients of the Russian American Company hospital in Sitka yielded a collection of over 11,000 artifacts and 12 kg of animal bone. Ten attributes of the collection characterize it as Russian, including a preponderance of British goods supplied by the Hudson's Bay Company, a relative lack of common American-made items, and a heavy emphasis on locally-procured resources. A faunal analysis yielded data concerning the food resources available to the Russians during a period of about six months lasting from mid-winter to mid-summer of the year 1860. The local deer were an important source of meat for the occupants of the hospital during this time period. The presence of deer bone and the complete absence of similar-sized artiodactyls is pertinent to the argument that the Russian word *iaman* referred to deer as well as wild sheep and goats.

**KEO BORESON** Eastern Washington University  
**In the Land of the Rainbow Serpent: A Review of Australian Rock Art Research**

During the last ten years the study of Australian rock art has burgeoned because of the increased focus on understanding and preserving the Aboriginal cultural heritage. This renaissance has fostered a wide range of rock art studies including survey and documentation of sites, stylistic analyses, pigment composition, and assessing the relationship of rock art to ethnographic groups, language groups, and individual painters. The growth of Australian tourism has promoted innovative studies in site management and conservation/preservation techniques. In some areas of Australia the research is unique in that the relationship of rock art to mythology and the meaning of symbols is being studied by working with Aboriginal consultants. The Australian Rock Art Research Association (AURA) Congress, held in Darwin in August-September of 1988, provided an international forum for presenting information related to the study of rock art within Australia as well as in numerous other countries. This review of the current status of Australian rock art research is supplemented by slides taken during an eight-day tour of rock art sites in Arnhem Land and Kakadu National Park in the Northern Territory.

**GARY C. BOWYER Oregon State University  
Fort Hoskins: Symbols of Status and Authority**

Fort Hoskins (1856-1865), Fort Yamhill, and Fort Umpqua were established at the conclusion of the Rogue Indian Wars. U.S. Army Regulars and state volunteers occupied Fort Hoskins during this period. Excavated in 1976 and 1977, an initial site report was produced. This research will focus on artifact differences in the enlisted men's and officers' areas. The artifacts, as symbols of authority, are structured and reinforced within the military system. Contained within the military structure at Fort Hoskins are underlying authority systems that help produce a distinct artifact pattern. Questions will concern the makeup of military authority at Fort Hoskins.

**DANIEL L. BOXBERGER Western Washington University  
Non-Reservation Land Use in Western Washington: An Ethnohistoric Analysis of Native Strategies**

Until fairly recently much research on Native people in the Northwest has focused on reservation populations. As we are beginning to note now, especially with new research brought to light in the Federal Acknowledgement Process, relatively large numbers of Native people never removed to a reservation. In addition, reservation populations continued to utilize the resources of public lands assured to them by treaty, and were choosing strategies that maximized the opportunities available. This paper will explore non-reservation land use by both reservation and non-reservation Native populations of western Washington in the late 1800s.

**MICHAEL S. BURNEY Confederated Tribes of the Umatilla Indian Reservation  
American Indian Resources and the Hanford Reach: A Legacy of Middle Columbia Indian Heritage**

The Hanford Reach is abundant in American Indian heritage. Despite the efforts of unscrupulous collectors, massive dams, and lesser developments along the Hanford Reach, these events have not succeeded in completely robbing this area of its antiquities or sanctity. Pacific Northwest "tribes" have utilized the Hanford Reach for thousands of years making it a place of great history, tradition, and reverence for contemporary Indian peoples. Preservation of the cultural values of the Hanford Reach from further degradation is advocated, and recommendations are made to assess the remaining cultural resources and ensure their protection and conservation from further molestation.

**KENT BUSH National Park Service  
Collections from Seven Northwest Forts**

The Pacific Northwest Region currently controls major archaeological collections from seven forts in the states of Washington and Oregon. Four of these forts are military and three are civilian. The collections from these forts are estimated at circa 2 million individual objects, most of which are glass, ceramic or metal. This material forms a corpus of data that is often overlooked during research of early settlement patterns in the region. The National Park Service is currently involved in a major thrust to catalogue this material

in order to make it more available to the researcher. In addition, the Service is looking for cooperative projects to evaluate this material, and make the findings available to both the serious student and the lay public.

**GREG CAMPBELL University of Montana  
Effective Fertility, Politics, and Osage Population Change, 1877-1907**

The period between 1877 and 1907 is critical in Osage history. During this period, a significant shift in Osage politics took place in which mixed-blood Osage replaced full-blood Osage in authority and decision-making power with the United States government. A significant factor in this political shift was population change. Using child-woman ratios, I analyze the effective fertility differentials between Osage mixed-bloods and full-bloods. From this data, I explore the political consequences from 1877 to 1907 for the Osage.

**SARAH CAMPBELL Western Washington University  
Potential Applications of Burial Data to Pacific Northwest Regional Issues**

Although burial analyses have contributed to archaeological studies of social organization, population structure, nutrition, and health, mortuary data from the Pacific Northwest have not been effectively integrated in interpretation of regional prehistory. Recent technical advances promise even greater potential for burial data to contribute to regional research questions concerning the evolution of marine adaptations, development of social complexity, and introduction of epidemic diseases. Archaeologists, cultural resource managers, and Native Americans should work together to re-evaluate the importance of burial data and to set standards for adequate levels of analysis and recording that do not violate human dignity.

**MINERVA L. CAPLES Central Washington University  
Not Exactly Ethnography: An Explanation and Critique of the Naturalistic Interview Method Used in Multicultural and Bilingual Education Classrooms**

This paper gives an explanation of the goals and purposes of naturalistic interviewing in multiethnic school settings, and offers a critique of the method itself, using a case study to illustrate various points made by the presenter. George and Louise Spindler's work on interpretive ethnography of education is used as the foundation for exploring the phenomenological attributes existent in both this method (ethnography) and the naturalistic interview which has its knowledge base in ethnography. A brief rationale for a closer association between anthropology and education at teacher-training institutions is presented.

**JOHN CARDINAL Washington State University  
GROVER KRANTZ Washington State University  
Alternative Reconstructions of KNM-ER 1470**

Skull KNM-ER 1470 has often been attributed to genus *Homo*, specifically "habilis." This attribution is based on its large endocranial capacity, orthognathic face, and overall

gracile appearance. The *Homo* designation of this skull assumes adulthood. A strong case can be made that ER 1470 is actually subadult. Additionally, the orthognathic position of the face seen in most reconstructions is questionable. The specimen may be as prognathic as most australopithecines. Had ER 1470 reached adulthood, it would be interpreted as a remarkably large male *Australopithecus africanus*. This implies a high degree of sexual dimorphism in that taxon, analogous to baboons.

**CAROL J. CARMEN Oregon State University  
Sweatlodge Participation among Women of the Nez Perce Past and Present**

Various Native Americans both in literature and in personal discussions have made the statement that the sweatlodge represented the universe, others claim that it represents the womb. A literature search has yielded many symbolic aspects of the sweatlodge and related ceremonies that are common to many Native American cultures. Preliminary research has revealed aspects of the sweatlodge ceremony which appear to support the contention stated above. Some of these aspects include, a circular floor plan, the type of building materials, the placement of the heat source, the use of herbs and grasses for purification, the actual purpose for which a sweat is held, and the division into male and female sweats. In this paper we will examine why the sweatlodge continues to exist while other traditional ceremonies have disappeared. To accomplish this goal we will concentrate on participation among the women of the Nez Perce, the stated reasons for sweating, and the benefits expected by the participants in the sweat.

**LAURENCE M. CARUCCI Montana State University  
Art and the Strategic Construction of Gender and Ethnicity**

This paper shall explore the way in which a select group of Ujelang Atoll art forms differentially relate to the expression of indigenous ideas of ethnicity and inter-atoll differentiation. Small sailing canoes fashioned by men and certain women's handicrafts serve to express local distinctions of unique atoll identity. While similar in overall design to like objects in the Marshall Islands, each art form has detailed features that communicate information about subgroups within the atoll and about individual designers. These signifiers only take on communicative value, however, in relation to carefully nuanced interpretative contexts. Outside of those contexts of use, the objects are all "the same shape" (*juon wot jekjekier*). The cultural materials *per se* will seldom make the distinctions apparent since the sets of ascribed meanings lie in the everchanging, productive relations of signification and social practice (human action), not in the objects themselves.

**JAMES CHATTERS Batelle, Pacific Northwest Laboratories  
Human Remains as a Source of Scientific Data**

Native American requests for the return of their ancestors' remains from museum archives may ultimately have to be complied with, and thousands of prehistoric human skeletons will be reburied. Although there are strong moral arguments for and against this action, the reinterment of human remains would constitute a major loss of information not only for archaeology, but for fields as diverse as epidemiology and law. Numerous analytic

procedures are now available for obtaining data from these bones on past human behavior and the history of the human condition, data that would not otherwise be available or inferred from artifact assemblages. Diet, locomotion, work habits, health and disease, gene flow, and trauma all leave their mark on skeletal anatomy, bone structure, or isotopic composition of bone collagen. Some techniques for interpreting this evidence are illustrated with data from the Columbia Plateau and elsewhere, and modern applications of the results are discussed. It is suggested that some or all of these analyses should be conducted on curated skeletal material prior to reburial, providing agreement can be obtained from the Native American leadership.

**CHOU YUAN-HSIN University of Montana  
Gatekeeper, Reception City, and *Kangch'ing* of the New Chinese Immigrants**

This paper discusses the social structure of an elite group of new immigrants from Taiwan and Hong Kong in Monterey Park, California, in contrast to the traditional associations in Los Angeles' Chinatown. These new immigrants have turned Monterey Park into "Chinese Beverly Hills," and a new metropolis for the Chinese in southern California. This paper focuses on: 1) the cultural brokerage in Monterey Park; 2) the secondary *kangch'ing* (patron-client) relationship; 3) informal and temporary association based on speech group in the social gathering; 4) the problem of the "little overseas student," the "flying father," and the split household.

**MICHELE SCALLY CHURCH University of Montana  
Pathologies, Trauma and Anomalies Present in Five Skulls from the Collection of the University of Montana**

This paper is the first step in an attempt to describe and classify the pathologies and anomalies found in the skeletal collection housed at the Anthropology Department at the University of Montana. The materials analyzed consisted of five solitary skulls. These particular skulls were examined because they appeared to display a variety of pathologies and were reported to have been victims of scalping. In addition to the assessment of basic attributes such as sex, age, and racial affiliation, one of the goals of this analysis is to establish whether or not the scalping contention is supported by the types of trauma present.

**LINDA CLARK Bureau of Land Management  
The Seal Rock Site (35LNC14): An Example of a Late Littoral Stage of Cultural Adaptation to the Southern Northwest Coast**

Seal Rock (35LNC14) is a late prehistoric shell midden located on the central Oregon coast. Information derived from faunal remains, radiocarbon dates, geographic location, and size of the midden deposits suggest the site represents a late littoral stage of cultural adaptation to the Southern Northwest Coast. Analyses of bone tools, antler tools, and lithic artifacts recovered from Seal Rock provide information on the technological and functional aspects of this stage of adaptation.

**LINDA CLARK Bureau of Land Management**  
**STEPHAN E. MATZ Bureau of Land Management**  
**Overview and Interpretations of Lithic Tool and Debitage Assemblages from Seven Upland Sites in North-Central Oregon**

In the autumn of 1988, test excavations and analyses of surface artifacts were conducted on seven prehistoric sites located on Bureau of Land Management lands in the Johnson Heights area of eastern Wheeler County, Oregon. Comparisons with projectile point styles from the Columbia Gorge and Great Basin have provided evidence of occupation within the Johnson Heights area ranging from perhaps 7000 years ago to within the last few hundred years. Analyses of the debitage and tools located within shovel probes and found on the surface of each site were conducted to determine site function and technological stages of tool manufacture and core reduction for the sites investigated within this project.

**THOMAS J. CONNOLLY Oregon State Museum of Anthropology**  
**MARK E. DARIENZO Oregon State University**  
**The Geomorphic Setting of Archaeological Sites on the Southern Clatsop Plains, Oregon**

The Clatsop Plains, on the extreme northern Oregon coast, have been described as the southern portion of the "delta" of the Columbia River. They are characterized by a series of massive sand dunes which have prograded seaward. At the southern end of the Clatsop Plains, sand dunes give way to a series of low gravel ridges which are also believed to represent seaward prograding beach ridges. Substantial archaeological deposits occupy many of these gravel ridges. Archaeological testing at two sites occupying former beach ridges, and geomorphological investigations in the site environs, were undertaken to examine prehistoric occupation in the context of the tentative model of a seaward prograding shore.

**STAN COPP Vancouver Community College**  
**Perspectives on South Okanagan Rock Art**

Examination of a number of pictograph sites located in the south Okanagan Valley of British Columbia reveals a number of interesting design elements. In particular, the placement of anthropomorphic and zoomorphic figures on or near natural veins and cracks suggests the presence of supernatural "power line" motifs.

**RONALD C. CORBYN National Park Service**  
**The North West Company Fort at Tongue Point, Oregon**

For almost three months in 1814, the North West Company carried out construction of a planned fort of extraordinary dimensions on the well known landmark, Tongue Point, overlooking the mouth of the Columbia River. It was designed to replace Fort George (formerly the American "Fort Astoria"), which was considered inadequate to protect the Company and the British interests on the Pacific coast. The Tongue Point fort, however, was mysteriously abandoned before its completion. A number of Company traders and

trappers left journals that describe this undertaking. Their plans and work on the fort will be discussed along with possible reasons for the abandonment of this ambitious enterprise.

**BRUCE M. CRESPIAN Bureau of Land Management**  
**Integrating Native American Traditional Values into Land Use Planning**

The Burns District of the Bureau of Land Management is involved in the development of a Resource Management Plan (RMP) which will guide multiple-resource management actions for public lands in northern Harney County, Oregon. Native American traditional values, reflected in uses of resources found on public lands, are considered as part of the planning process. Traditional root harvesting in the Stinkingwater Mountains is the focus for land-use allocations for the Northern Paiute and others. Ethnography provides a context for contemporary practice, which is discussed in the light of planning regulations, Native American policy, and other issues.

**SUSAN CROCKFORD Pacific Identifications**  
**See What Happens When You Talk to Kids About Archaeology**

This poster session is of thank-you letters from elementary school children in response to classroom visits presenting various aspects of archaeology/physical anthropology. Note which ideas or facts impress different age groups and which topics were most successful. Never been roped into one of these? Come and get some practical hints--your time may come!

**DALE R. CROES Washington State University**  
**Hoko River Site, Olympic Peninsula, Washington**

Over the past two years we have been developing a public replication of the 2-3,000 year old Hoko River fishing camp. With excellent preservation of waterlogged perishable artifacts from the wet riverbank portion of the early fishing camp, we have an excellent understanding of 90+% of the prehistoric material culture typically destroyed in dry sites. Excavations of the onshore dry site living areas adds information on how the prehistoric camps were organized and arranged. With these combined data we have been reconstructing a full scale fishing camp directly across the river from the rescue excavations for a better public presentation of life in Washington during the Tri-Deca Centennial.

**KATHLEEN DAHL Washington State University**  
**LAURA PUTSCHE Washington State University**  
**Shop Till You Drop: Alienation and Wealth Accumulation in Industrial and Tribal Societies**

Explanations proposed by economists for the propensity of people in industrialized societies to accumulate wealth are unsatisfactory because they lack insight provided by studies of tribal societies. Many assume that insatiable wants are part of human nature and that scarcity is characteristic of all economic systems. Tribal societies under aboriginal conditions reportedly lack both features as well as the tendency to amass unlimited wealth. The "need" for an increasing supply of consumer goods in industrial societies can be

explained in terms of Marx's concept of alienation combined with a decline in the family's self-sufficiency and control over survival.

**DOUGLAS A. DANIEL** Western Washington University  
**Strategic, Tactical and Logistical Aspects of the Spanish Conquest of Mexico: An Ethnohistorical Reconsideration**

Most analyses of the Spanish Conquest of Mexico focus upon psychologistic or technological explanations for the "ease" of the Spanish victory. These interpretations and the belief in an easy Spanish victory are inconsistent with the ethnohistorical texts. This paper analyzes the Spanish Conquest in terms of the cultural expectations of war within Spanish and Aztec society, as well as the organizational and tactical structures available to both sides. The discussion of these points will be conducted at all times in the light of available ethnohistorical sources.

**CARL M. DAVIS** United States Forest Service  
**THOMAS V. RUSSELL** United States Forest Service  
**JILL A. OSBORN** United States Forest Service  
**DENNIS K. SHRADER** United States Forest Service  
**Life Beyond Inventory: Cultural Resource Site Protection on National Forest Lands in Oregon**

Following years of intensive cultural resource inventory on National Forest lands in Oregon and the Pacific Northwest, federal land managers and archaeologists now face the difficult problem of how to protect this rich and varied cultural resource base from artifact thieves. This effort requires overcoming a range of misconceptions about the nature and extent of artifact theft and developing realistic site protection strategies which mesh with a broad spectrum of National Forest uses. This paper provides information about archaeological theft in Oregon and offers general recommendations for developing effective site protection strategies.

**DAVID DE VRIES** Hammon, Jensen, Wallen & Associates, Inc.  
**Photogrammetric Applications in Archaeology**

This exhibit is a display of maps and photographs from an Oakland, California based photogrammetric consulting firm with forty years' experience in engineering and resources mapping. For the past ten years the firm has worked extensively in the field of photogrammetric applications to archaeological site mapping and historic structure documentation.

**RICHARD DUNN** University of Montana  
**The Uncertainty Factor in Quantum Mechanics and Its Application to Economic Anthropology**

Economic anthropologists have been struggling for accord on theoretical principles for many years. Academic arguments have centered on the formalist-substantivist polemic, the production-exchange dispute, and Marxist adaptations to the nature of economy and

society. This paper examines the perplexities quantum theory has caused in physics and philosophy and suggests that these uncertainties also apply to the anthropological view of primitive, peasant and industrial societies. The paper will try to avoid clumsily fitting other disciplines to anthropological theory, but questions whether a resolution of the controversies in economic anthropology may ever be reached given the substantial doubts concerning the basic nature of matter.

**CYNTHIA EGAN** University of Oregon  
**Witchcraft in Contemporary Native American Society: A Case Study**

The ability to influence the course of events by supernatural means is found in abundance in native North American religions. It is believed by many Native Americans that power derived from supernatural means can be used to harm, or even kill other individuals. This paper will address just such an activity among modern urban Native Americans. An individual case study will be presented and analyzed for a better understanding of the witchcraft phenomenon.

**JOHN L. FAGAN** The Cultural Heritage Foundation  
**JO REESE** The Cultural Heritage Foundation  
**Results of the 1988 Archaeological Survey along the Oregon Shore of the Lower Columbia River Gorge**

During the summer of 1988, The Cultural Heritage Foundation surveyed 35 miles of the Oregon side of the Columbia River shoreline in the Gorge. The area surveyed was between ordinary high and low water. In 1988, during unseasonably low river levels, the survey located 60 new sites; 7 were prehistoric, 34 historic, and 19 had both historic and prehistoric components. Many of the historic sites were related to fishwheels and canneries, and other sites included an early pulp mill, Coast Guard station, and CCC dump. Evidence of Chinese occupation was recorded at several sites. Most prehistoric sites have evidence of fishing, and two may be residential.

**ANN C. FULKERSON** Lithic Analysts  
**Two Predictive Locational Models of Aboriginal Sites in the Methow River Region, North-Central Washington**

This paper presents two models for the Methow River region: a deductive model based on environmental structure, ethnographic evidence, and anthropological theory; and an inferential model based on significance tests of the locations of 44 aboriginal sites. The deductive model used three dimensions of analysis, two spatial scales, and postulates three subsistence-settlement systems. The inferential model compares relatively constant environmental variables (aspect and slope) for known site locations with those for a sample of the region. The two models provide complimentary information regarding the distribution of site locations across the landscape.



**JERRY R. GALM Eastern Washington University**  
**Prehistoric Trade and Exchange in the Columbia Plateau**

Trade in the Interior Plateau of the Pacific Northwest is documented through the representation of obsidian and marine shell artifacts during all periods of prehistory. Early Period (ca. 10,500-6000 BP) trade in these materials centers on exchange with Northern Great Basin and North Pacific Coast groups, respectively, and establishes exchange networks that remain operative into the Historic Period. Four regional trade centers, two primary and two satellite, are proposed on the basis of archaeological distributions of trade materials. The Dalles-Deschutes area of the Columbia River and the Lytton-Lillooet reach of the Fraser River are examined as longstanding centers of exchange. At least by the start of the Late Period, an expansion of exchange networks is postulated and is thought to include the development of satellite centers situated at prime fishing locales. Kettle Falls and the Wenatchee area are examined as possible satellite loci for the trade in obsidian and marine shells, as well as the redistribution of other general commodities.

**RICHARD GARVIN University of Calgary**  
**Botulism and Prehistoric Populations on the Northwest Coast**

Botulism is a bacterial food intoxication caused by the presence of a toxin produced by germinated *Clostridium botulinum* spores. Type E botulism and its rate of incidence among the aboriginal populations of the Canadian Pacific Northwest and Arctic coastlines is the highest in the world. From 1940 to 1984, in Canada, there have been 109 authenticated outbreaks of human botulism which have affected 234 people and caused 82 deaths. Seventy-seven of the 82 deaths (94%) were related to the consumption of raw sea mammal flesh or salmon eggs by Native peoples. Firstly, the paper provides estimates of probable prehistoric case and death rates of type E botulism on the Northwest Coast. Secondly, the impact of botuligenic poisoning is examined with regard to beliefs concerning witchcraft and sorcery, particularly among the Tsimshian of the north coast.

**STAN GOUGH Eastern Washington University**  
**JERRY R. GALM Eastern Washington University**  
**REBECCA A. STEVENS Eastern Washington University**  
**45KI291: A Late Prehistoric Rockshelter Site in the Western Cascade Mountains**

Excavations conducted at 45KI291, near Skykomish, Washington, documented a late prehistoric, single component, montane hunting camp. The cultural assemblage included a somewhat diverse but relatively small sample of highly fragmented faunal remains as well as lithic and bone artifacts. Site structure, recovered cultural materials, and placement in a regional perspective are discussed.

**TONYA R. GRELL Central Washington University**  
**Bones, Bugs and Bleach: The Hazards of Facial Reconstruction**

A forensic facial reconstruction was performed as a student project for the Yakima County Sheriff's Office in conjunction with a homicide investigation. I will illustrate methods and

materials, and discuss the use of a live model to obtain more realistic racial characteristics. Consequences of the investigation are reported.

**DENNIS GRIFFIN Bureau of Indian Affairs**  
**Bubbling Waters and Bivalves--The Bane of Port Moller: A Look at the Current Status of Hot Springs Village, Port Moller, Alaska.**

Hot Springs Village at Port Moller has been the site of nine seasons of archaeological investigations yielding a rich assemblage of stone, bone and antler artifacts suggesting a marine oriented economy. Three distinct occupational areas have been identified with C14 dates ranging from 5000-600 BP. During the summer of 1987, archaeologists from the Bureau of Indian Affairs ANCSA office spent six days at Port Moller Hot Spring conducting a 14(h)(1) site investigation. In light of reports of continuing vandalism at the site and the time lag involved in reporting the results of past excavations, Hot Springs Village was resurveyed and mapped with attention being made to record all signs of past subsurface disturbance. One additional occupational area was identified. A summary of information known about the Port Moller site as well as its current status is presented.

**STEVEN HACKENBERGER Central Washington University**  
**T. GRELL Central Washington University**  
**R. CLICK Central Washington University**  
**D. ANDERSON Central Washington University**  
**D. DOVE Central Washington University**  
**J. M. ALEXANDER Central Washington University**

The Status of Mortuary Remains on Loan to Central Washington University  
Numerous individuals are represented in the mortuary remains on loan to Central Washington University. The collections are on loan from the Thomas Burke Memorial Museum and the University of Washington. The collections represent diverse sites in western and eastern Washington state, and include remains from several major sites of regional importance. An ongoing inventory of these collections is reported with ideas for future research.

**STEVEN HACKENBERGER Central Washington University**  
**MELISSA LEE Washington State University**  
**Site Records Inventory: The Status of Native American Burial Sites and Collections**

Preliminary inventory of WARC site records indicates roughly 600+ suspected burial locations. About 50 of these locations coincide with pithouse sites; 120 may be mortuary sites. Most sites are disturbed, about 90 may remain intact, 80 are inundated, and about 130 have been collected. Burials have not been excavated at all of these collected sites. Incomplete site records preclude an accurate estimate of the number of individuals removed from their original place of interment, but estimates of MNI for some regions of the state are possible. Few burials are well dated and detailed study of osteological materials may be limited by sample size.

**STEVEN HAMILTON, Portland State University  
The Meier Site Lithic Technology**

Lithic raw materials from the Meier Site, in the Portland Basin, are predominately cryptocrystalline river cobbles. Excluding used flakes, projectile points are the most common flaked stone tools. Stages in projectile point manufacture include production of bipolar and percussion flakes with final shaping by percussion and pressure flaking. Core and debitage morphology and the location of use-wear on hammerstones and anvils indicates that bipolar and percussion methods were used in core reduction. Heat treating was common.

**BRIAN HARRISON Clatsop Community College  
Historical Archaeology at Old Fort Stevens: 1979 and 1980**

Archaeological field schools were conducted at Fort Stevens, near the mouth of the Columbia River at Point Adams, in 1979 and 1980. The excavations were sponsored jointly by Oregon State Parks and Clatsop Community College. The present paper briefly reviews the history of the fort and the results of the two summers' research, with implications for cultural resources management and education of park visitors on historic preservation.

**PATRICK M. HAYNAL University of Oregon  
Klamath Tribal Government: 1961-1986**

This paper discusses the impact of the federal government's Indian termination policy on the government of the Klamath Tribe of Oregon. The Klamath were terminated from federal supervision and control in 1961. After providing a brief background sketch on the policy of termination in general, the paper focuses on the effects that policy had on the Klamath Tribal Council between the years 1961-1986. The paper concludes with observations on the transcultural techniques employed by the Klamath Tribal Council in its successful effort to gain restoration to federal status in 1986.

**LUCILE A. HOUSLEY Malheur Field Station  
A Time to Remember (Video)**

From 1934 to 1944, Fred Klerekopper, a Presbyterian missionary, lived in Barrow, Alaska, and filmed the Inuit peoples hunting, their ceremonies and lifeways. When the Native Claims Act was being reviewed in Washington, D.C., in the late 1960s and early 1970s, his diaries, film and testimonies helped establish where the people had hunted, fished, camped and their practices. After he died, the North Slope Borough commissioned Media Design, Inc. to integrate his "old" film with modern footage to document the change in the peoples' lives from one outside boat per year to the modern jet age. This film was made for the people of Barrow, Alaska, and has significance for the larger anthropology community.

**GEORDIE HOWE Arcas Associates  
ARNOUD STRYD Arcas Associates  
"Facing the Water," the Coast Salish Village of Tsawwassen: Archaeological  
Investigations at DgRs-2 on the Tsawwassen Indian Reserve**

A detailed archaeological impact assessment of the prehistoric site of Tsawwassen (DgRs-2) was conducted during the spring of 1988 by Arcas Associates. The site is located on the northwest end of Roberts Island, near the B.C. Ferry terminal. The primary goal of the project was to prepare a detailed description of the site, with an emphasis on that part of the site located within a proposed B. C. Ministry of Transportation and Highways upgrade and development of the Highway 17 Tsawwassen causeway. Other goals included the delineation of site boundaries (horizontal and vertical), evaluating the site's scientific value and research potential, and making a preliminary interpretation of the site's significance. The results indicate that a substantial portion of the site remains undisturbed. Results suggest that site development has been closely correlated with the accretion of the Fraser River Delta since the Late Marpole phase.

**LARRY HUSSEY Walla Walla Community College  
A Brief History of U.S. Fort Walla Walla, Washington, and Recent Archaeological  
Activities at the Site**

Fort Walla Walla was a major U. S. military bastion in eastern Washington from its founding in 1858 until the date of its closure in 1910. During that period soldiers stationed at the fort fought numerous Indian battles and provided the protection early pioneer settlers so desperately needed. Recent archaeological activities at the site (45WW33), beginning in 1975, have revealed a rather odd distribution of artifacts and, surprisingly, not only the Fort Walla Walla refuse but also nearly three decades of more recent deposits.

**LARRY HUSSEY Walla Walla Community College  
How the Past Can be Lost: A Local Example of Fifteen Years of Carelessness,  
Ignorance and Vandalism**

The Walla Walla area of southeastern Washington represents one of the earliest white settlement efforts in the Pacific Northwest in addition to being an often-used area by at least three Indian tribes. The list of Indian campsites and burials, of pioneer building sites, dumping grounds, cemeteries and battlefields goes on and on. Many of these sites are now being destroyed by highway builders and construction engineers more often concerned about square footage than about America's heritage. And, vandalism and bottle hunters steal more from us than we will ever know.

**MANFRED E.W. JAEHNIG Eastern Oregon State College  
The Human Ecology Model and the Science of Chaos: Some Remarks about Cultural  
Processes**

The human ecology model (also called the cultural ecology model) postulates that three main factors interact to cause cultural change. The factors are the environment, the population density, and the cultural complexity. The environment and the population

density are considered to be semi-independent factors, and cultural complexity is considered to be the dependent factor. All three factors are considered to include non-linear (i.e., chaotic) components, such as sensitive dependence on initial conditions and/or strange attractors. Non-linear models can be used as explanatory but not, unfortunately, as predictive models.

**LINDA JENCSON** University of Oregon  
**Social Drama and Leadership Change in an American Witchcraft Cult**

Neopagan witchcraft or Wicca, is a feminist magico-religious cult currently gaining in popularity in the U.S. Participant observation among neopagan groups reveals that leadership changes are sometimes accomplished through socially disruptive periods of fissioning and alliance formation accompanied by accusations of black magic against rival factions. These social upheavals compare remarkably well with the "Social Dramas" identified by Victor Turner among the Ndembu of Africa. Cross cultural analysis illuminates the structure and function of these group upheavals.

**DENNIS L. JENKINS** Oregon State Museum of Anthropology  
**THOMAS J. CONNOLLY** Oregon State Museum of Anthropology  
**Archaeology of Indian Grade Springs: A Specialized Campsite in the Stinkingwater Mountains, Central Oregon**

Archaeological investigation of five sites in the Stinkingwater Mountains in Harney County, Oregon, indicated the presence of three site types: basalt cobble quarries, temporary task camps, and large (possibly semi-permanent) campsites. The site at Indian Grade Spring (35HA1421), a temporary task camp, was the focus of further data recovery efforts. Analysis suggests the site was a hunting/gathering camp, but that it also served a more specialized function as a wood working station. The site is located near the traditional Paiute root camps, and the production of hand-held wooden tools may have coincided with aboriginal movements to those important sites. Occupation is dated between 2000 and 500 years BP.

**D. JOHNSTONE** Simon Fraser University  
**The Growth of a Midden: Geoarchaeology at Long Harbour DfRu-44.**

Large scale areal excavation, exposure and contour mapping of gross natural layers has allowed for the vertical and horizontal documentation of midden accumulation. The various stages in the life history of this midden, as represented by the gross strata, are presented using plan, contour, and computer generated three dimensional maps.

**S.A.C. KELLER** Eastern Washington University  
**RUTH A. MASTEN** Eastern Washington University  
**A Review of the Skeletal Material from the 1951-52 Excavations at Fort Spokane**

In 1951-52 a series of burials was excavated under the direction of Louis Caywood as part of a project for the Park Service at the Fort Spokane trading post of the North West and other companies. These burials were subsequently housed at the Eastern Washington State

Historical Society's Cheney-Cowles Museum and, in addition to field identification and museum cataloguing, they were also sent out of state for examination. In the course of these several curation processes, the number of individuals, their ages and sexes were variously interpreted. Other problems were also introduced. This paper is a discussion of the analysis of the collection at Eastern Washington University subsequent to its transfer from Cheney-Cowles.

**JAMES D. KEYSER** United States Forest Service  
**Paleolithic Rock Art of Western Europe**

The Paleolithic cave paintings of western Europe are the world's most famous rock art--known so well because they evoke images of extinct animals and secret religious rituals that give us a glimpse into the life and mythology of our Pleistocene ancestors. In addition to the public interest in these cultural treasures, they contain a wealth of anthropological information that is unavailable from any other archaeological context. Current research with Paleolithic cave art has demonstrated that much more remains to be learned about these paintings and carvings. Insight into religion, worldview, communication, and other cultural institutions has come from research approaches that are just now beginning to be used by European scholars. During a two-year research project in 1986 and 1987 I visited more than 20 of the painted caves in France and Spain and was introduced to some of the research methods that characterize modern efforts to understand the world's first art.

**JAMES D. KEYSER** United States Forest Service  
**Tsagagilal: Rock Art as an Interpretable Phenomenon**

Tsagagilal--She Who Watches--is probably the best known piece of rock art in the Pacific Northwest. As the focal point of a developed site at Horsethief Lake State Park, thousands of visitors have the opportunity to see this petroglyph every year. Despite its notoriety, however, Tsagagilal remains poorly interpreted, and therefore poorly understood by the general public. Archaeologists have classified it as part of the Long Narrows Conventionalized style, but anything the public knows about the image is gleaned primarily from semi-sensationalized newspaper accounts that simply reiterate modern Indian mythology concerning the petroglyph. While this myth provides one level of understanding, it is exactly (and only) that--a mythological explanation that removes the site from the cultural reality of its time. In contrast, archaeological research has revealed much about the Late Period cultures of The Dalles area, including relatively good dates for the Tsagagilal image. When I combined these and other data in my recent rock art research it became apparent that we can begin to understand Tsagagilal as its makers did. The result is a story that adds significantly to the cultural dimension of the Prehistoric Period Indians of The Dalles area--a story well worth telling that can only be told through the efforts of archaeology.

**ELWYN C. LAPOINT** Eastern Washington University  
**Treatment of Culture in a Linguistics Survey Course**

An undergraduate survey course in anthropological linguistics must trace the relationships linking linguistics to other specialties within anthropology. In particular, it must show how

linguistic data illuminate cultural phenomena and how social factors constrain linguistic usage. To accomplish this objective, I favor a holistic approach that views language and culture as forming a continuum of coded communication. Grammatical forms are seen to embody cultural classifications, while social context shapes patterns of speaking. An integrated approach to language and culture is recommended.

**CHERYL A. MACK United States Forest Service**  
**Aboriginal Use of Log-Fire Drying Trenches in the Southern Washington Cascades**

A number of surface features which appear to represent the remains of log-fire drying trenches has been documented within the Indian Heaven Wilderness Area of the Gifford Pinchot National Forest. Aboriginal use of log-fire drying trenches has been documented ethnographically in this portion of the southern Washington Cascades. Huckleberries represented a major resource to the Klickitat and Yakima peoples who occupied this area seasonally during the historic period, and drying and preserving berries for winter use was a major warm season activity. Identification of warm season camps has traditionally been a problem in forested environments, due to the lack of non-perishable materials present at these sites. Study of these features may aid in the future identification of warm season camps.

**JOANNE M. MACK Pomona College**  
**Siskiyou Utility Ware: A Possible Horizon Marker for the Southern Cascades of California and Oregon**

Siskiyou Utility Ware has now been identified at several prehistoric sites located within the upper drainages of three major rivers in northern California and southern Oregon. Detailed analyses of several collections of the ware indicates a great deal of similarity in manufacturing techniques, vessel shape and function. In addition, all pottery collections dated by radiocarbon determinations fall within a 700 year period ending by A.D. 1600 and are found associated with other ceramic objects, Gunther barbed projectile points, and house pit villages.

**RUTH A. MASTEN Eastern Washington University**  
**The La Pine Project: Sites in the Fort Rock Valley**

In 1987 and 1988, personnel of Archaeological and Historical Services conducted a cultural resources survey and testing of the Bonneville Power Administration's proposed La Pine transmission line project in Deschutes, Klamath, and Lake counties, Oregon. The project extends approximately 30 miles through the High Lava Plains of the Deschutes National Forest and at the south end gradually drops into the Fort Rock Valley. Of the eleven sites recorded, all have relatively broad horizontal boundaries and are characterized by moderate-to-high densities of obsidian debitage and formed tools. This paper details the results of the survey and the testing excavations at eight of the Fort Rock Valley sites. Discussions also include a brief overview of the artifact and debitage recovery and the results of obsidian sourcing analysis.

**STEPHAN E. MATZ Bureau of Land Management**  
**A Projectile Point Chronology for Grand Teton and Yellowstone National Parks, Wyoming**

Projectile point measurements developed by Thomas (1981) for the Monitor Valley Key were used to classify projectile points from Mummy Cave and Jackson Lake archaeological projects, located in western Wyoming. Eleven projectile point styles were defined using measurements of points recovered from Mummy Cave, a multicomponent, radiocarbon-dated site which spans the last 9000 years. These point styles were combined into six chronologically sensitive projectile point groups. The groups were then used to date the surface assemblages from 16 sites located on the Snake River Delta, Grand Teton National Park.

**D.B.S. MAXWELL Simon Fraser University**  
**Predicting Meat-Weight from Shell-Weight: A Regression Approach.**

This paper presents a method which uses shell-weight to predict meat-weight in several species of bivalve shellfish common to the Strait of Georgia. Regressions are presented which demonstrate the relationship of shell-weight to meat-weight in the genera *Protothaca*, *Macoma*, *Saxidomus*, and *Mya*. These regressions were computed using over 600 specimens of known weight, collected from North Pender Island. There appears to be a good linear correlation of shell-to-meat weight for each species, with very little fluctuation throughout the course of the year. This technique can be used to determine how much meat would have been available from a given deposition of shell, simply by determining the weight of the valves of each species.

**D.B.S. MAXWELL Simon Fraser University**  
**P.M.K. CUNNEYWORTH Simon Fraser University**  
**Change through Time? A Preliminary Analysis of the Faunal Remains from Long Harbour (DfRu-44)**

This paper presents an examination of the temporal changes in relative frequencies of faunal remains recovered at DfRu-44 on Salt Spring Island. Different methods of data recovery--bulk samples vs. material obtained by screening through 1/4" and 1/8" mesh--are also discussed to compare their effects on perceived trends in the data. Early results of the study of temporal change suggest that while fish were always the dominant fauna, their relative role increased at the expense of mammal and bird resources in recent time periods.

**TIMOTHY P. McCLEARY University of Montana**  
**Aanmulutchik: My Arms Were Seized--The Crow Indian Witchcraft Metaphor**

Throughout the Northern Plains and the adjacent Plateau region there existed a belief in the power of thought to influence the external world. Among the Crow Indians of Montana this belief continues and it is glossed under the term "xapaaliikxawiia" (bad medicine) and it is used for witching. Because of a fear of this "thought witchcraft" the Crow have

developed a linguistic metonymy, aannuttua (seizing one's arms), to be able to discuss the matter in conversation without ill effects. Contemporary Crow speakers have turned the term aannuttua into a metaphor by using it outside of its original context. The metaphor contains references to the effects of "thought witchcraft" with full knowledge that the incident referred to was not caused by witchcraft. As Crow language has persisted, so has Crow culture. And as Crow culture has evolved, so has Crow language.

**RICHARD McCLURE, JR.** United States Forest Service  
**JAMES D. KEYSER** United States Forest Service  
**The Yakima Polychrome Rock Art Style**

Within the Columbia Plateau rock art tradition there are a number of distinct, localized styles. One of these, the Yakima Polychrome rock art style, is confined to that portion of south-central Washington traditionally occupied by the Sahaptin-speaking Yakima and Wayampam people. The style is defined by recurrent motifs, particularly stylized human faces, and is characterized by the combined use of red and white pigments. A group of five closely related sites forms the core of the style area. Limited motif distribution outside the core is used to evaluate relationships with 40 additional sites. It is suggested that Yakima Polychrome rock art dates to approximately 250-1250 years BP and is associated with late Cayuse phase cultural developments. Distribution of style elements indicates strong intergroup relations between occupants of the southern Yakima Basin, Klickitat Valley, and The Dalles area via Satus Pass. A shared late prehistoric shamanic tradition is hypothesized for the style area, based on functional interpretations.

**SANDI BRONCHEAU-McFARLAND** University of Idaho/Nez Perce Tribe  
**The Nez Perce Experience in the Columbia River Gorge: Yesterday, Today, Tomorrow**

The Nez Perce have in the past been excluded from much consideration in the Gorge, by ethnographers, archaeologists, anthropologists, and historians alike. It is an appropriate time to portray the important role the Nez Perce played in molding the history of the Gorge. This paper is directed at establishing without a doubt the fact that the Nez Perce did indeed exist in the Gorge prehistorically as well as historically, and that the Gorge has ongoing economic, religious, and political significance to the Nez Perce. In order to substantiate this claim it will be necessary to examine the evidence available from Nez Perce ethnohistory and ethnography, as well as a look at treaty rights, tribal possessory and usage rights, and mutual cross-utilization practices between families, villages, and bands or other groups. The author will address not only subsistence activities and Nez Perce patterns of mutual exploitation, but will also discuss the relevance of trade networks to this study.

**DANIEL S. MEATTE** Idaho State University  
**GENE L. TITMUS** College of Southern Idaho  
**JAMES C. WOODS** College of Southern Idaho  
**Initial Investigations at Kelvin's Cave (10-LN-93), South-Central Idaho**

Archaeological test excavations at Kelvin's Cave on the Snake River Plain reveal a depositional sequence spanning from the Late Pleistocene to contact times. Faunal

materials from this site include several Late Pleistocene mammals and an assortment of climate-sensitive microfauna. Cultural materials include a Late Prehistoric component, an Early Archaic component, and undiagnostic lithic materials associated with extinct megafauna. The depositional history of this locale suggests a close affinity to the nearby Wilson Butte Cave and Wasden (Owl Cave) sites, offering the potential for refinement of the current model of Late Pleistocene climate and cultural activity on the Snake River Plain.

**BRUCE MILLER** Arizona State University  
**An Ethnohistoric Examination of Coast Salish Women Leaders**

This paper uses Bailey's (1988) typology of leadership styles to point out changes in women's leadership. The data come from published sources, fieldnotes of an earlier anthropologist, oral tradition, and my own fieldwork, and concern eleven important Upper Skagit women from the contact period, the early twentieth century, and the present. I argue that women now hold traditional leadership positions ("familial" in Bailey's terms) but have also innovated a new political style suitable to reservation life, that of marginal "expert" who lacks identification with any particular faction. Unlike men, women have not employed the "numinous," or charismatic style of leadership.

**CHRISTIAN J. MISS** NW Archaeological Associates  
**Prehistory in Northern Idaho: The Pend Oreille River and Lake Pend Oreille**

Recent reconnaissance of selected areas visible at low water on the Pend Oreille River above Albeni Falls Dam and on Lake Pend Oreille identified numerous prehistoric sites exposed by sheet erosion. A preliminary classification based on artifacts, features, and fire modified rock density suggests at least three site types. The nature of the sites and information from the Calispell Valley Archaeological Project suggest similar intense use of camas and a logistically organized collector strategy of subsistence probably at least 2,000 years old and developing some 5,000 years ago. Information from earlier surveys, review of artifact collections, and recent geomorphological assessments suggest availability of data to study human settlement and subsistence in the area over the last 10,000 years.

**COLLEEN MURRAY** Washington State University  
**Recovering Northwest Native Women's History**

While the field of ethnohistory has enhanced our understanding of the historical context of Native North Americans, one complication in such studies is the inherent White bias present in much of the primary data available. At times it is difficult if not impossible to recover the Native viewpoint. This is particularly true for the case of Native women's history. This paper will begin to explore the relative merits of some of the primary sources available concerning Northwest Native women's history. Included is a discussion of problems with interpretations as well as possible solutions.

**MARC B. NANCE** Central Washington University  
**African Safari: A Student's Observations of the Archaeology of Lower Egypt and the East African Coast**

This paper is a view of Lower Egypt and East Africa as seen through the eyes of an American anthropology student. Paper will emphasize archaeological and historic cultures, focusing on sites of the Giza area as well as the East African coastal sites of Gedi and Fort Jesus.

**MARGARET NEWMAN** University of Calgary  
**Blood Residue Analysis of Artifacts from the Richey-Roberts Clovis Cache, Washington**

Recent studies have shown blood residues are frequently preserved on archaeological materials for millennia. Furthermore, by the use of bio-chemical and immunological techniques, these residues can be identified. This paper will discuss the application of forensic techniques to the analysis of artifacts. The results of the analysis of Clovis materials from the Richey-Roberts Clovis Cache, Washington, will be presented.

**DOLORES NEWTON** State University of New York at Stony Brook  
**Prospects for a Material Anthropology**

In the theoretical frame of the anthropology of anthropology, this paper examines the prospects for the development of a material anthropology--the ethnology of material systems. Issues addressed include an assessment of incentives for making collections, for making research use of them, and a consideration of the world of vested interests in which scholarship must take place. In addition, career implications of professional labels associated with material culture are discussed. Illustrations are drawn from the author's own experience.

**ALBERT C. OETTING** University of Oregon  
**Leftovers from 1939: Testing House Depressions at the ZX Ranch Site, Lake County, Oregon**

In 1939 Luther Cressman and a University of Oregon field party completed excavations at the Paisley Five-Mile Point Caves. These cave excavations provided archaeological evidence on the antiquity of human occupation in the Great Basin. Equally important, but never published, were tests conducted in house depressions at the ZX Ranch Site, along Upper Chewaucan Marsh. Recent investigations in the Lake Abert-Chewaucan Marsh Basin have focused on later Holocene semi-sedentary occupations, thus these 1939 tests are significant. This paper documents these housepit excavations and places them into current regional culture-historical interpretations.

**TERRY LEE OZBUN** Lithic Analysts  
**Estimating Production and Export at a Late Prehistoric Orthoquartzite Quarry**

In this paper, the lithic assemblage recovered from a late prehistoric site in the middle Canadian River region of Northeastern New Mexico is examined. Analysis consists of the development of models for stone tool manufacturing processes and evaluation of lithic material procurement and exportation. Experimental comparative methods are used to infer prehistoric reduction strategies that include flake core and bifacial reduction of orthoquartzite material quarried at the site. Simple quantitative analysis leads to identification of orthoquartzite flake blanks as the primary manufacturing goal of flintknappers at the site and as an item exported from the site. The number of flake blanks produced and exported is estimated from the proportional representation of the corresponding debitage.

**MAX G. PAVESIC** Boise State University  
**TERRY ZONTEK** United States Bureau of Reclamation  
**Numic Sturgeon Exploitation**

Recent field investigations at Three Island Crossing (10-EL-94) by Boise State University have recorded the first archaeological evidence of sturgeon (*Acipenser*) in southwestern Idaho. The presentation addresses the archaeological identification of the species, reviews the archaeological evidence from Three Island Crossing and related finds from Schellback Cave No. 1, offers an overview of sturgeon habitat and distribution, explores historic records of sturgeon use in southwest Idaho and summarizes Numic exploitation of the species. The findings represent an important addition to understanding the extent of anadromous fish use in the upstream limits of the Columbia Plateau.

**WILLIAM R. PERKINS** BPS Engineering  
**PAUL LEININGER** BPS Engineering  
**The Weighted Atlatl and Dart: A Deceptively Complicated Mechanical System**

In the fall of 1984, two engineers started experimenting with atlatls and darts. For the first time, the atlatl and the dart were treated as mechanical systems capable of oscillating potential and kinetic energies. Relationships were quickly discovered and built upon, resulting in unprecedented levels of performance. The following is a qualitative description of how a properly functioning weighted atlatl and dart interact to make the dart accelerate. Also included is a description of the mechanical and utilitarian superiority of a properly tuned system.

**LYNN PETERSON** University of Oregon  
**DOLLY FREIDEL** University of Oregon  
**A Geo-Archaeological Study in the Long Tom River Sub-Basin**

The primary goal of the Oregon Country Fair/City of Veneta Geo-Archaeological Project is to develop an understanding of the relationship between areas of prehistoric human occupation and geomorphological features and processes in the Long Tom River sub-basin of the Willamette Valley. The research was conducted in two phases: Phase I was

primarily a geomorphological study of the basin, while Phase II focused on detecting buried archaeological deposits associated with different sedimentological units. This paper presents the research designs of both phases and the results of Phase II fieldwork which included use of a proton magnetometer and backhoe to investigate buried deposits.

**RICHARD M. PETTIGREW** INFOTEC Research, Inc.  
**Archaeological Survey in a Remote Upland Sector of Southeast Oregon**

The 1988 BLM-sponsored survey of 5000 acres in the Trout Creek-Oregon Canyon Uplands in southeast Oregon proved a remarkable opportunity to investigate prehistoric land use in the northern Great Basin. Work included environmental analysis through a computerized geographic database, recording 78 sites, associating cultural and environmental variables, and generating a predictive model. Most intense use, primarily hunting and raw material procurement, apparently occurred between 4000 and 2000 BP. Predicted land use intensity and measures of prehistoric activity are highly correlated.

**R. KAVAN** di **PIGNATELLI** Eastern Washington University  
**Development of the Southern Temple-Palace Complex and its Relationship to the Development of the City in Ancient Mesopotamia**

Assuming that Northern Mesopotamia's pre- and proto-history may be viewed as a succession of cultural periods, with the later pre-history and early proto-history paralleling the stadial sequences in Southern Mesopotamia, where the impetus for civilization, urbanization, capital accumulation, and the invention of writing first came into being. The differences in cultural growth and development between Northern and Southern Mesopotamia provide the basis of this paper's exploration of the Southern "temple-palace complex" and its evolution into the "urbanism" of the city-state.

**DAVID POKOTYLO** University of British Columbia  
**BRIAN CHISHOLM** University of British Columbia  
**Paleodiet at the Milliken-Esilao Locality, Lower Fraser River Canyon, British Columbia**

This paper presents the results of stable-carbon isotope analysis of six late prehistoric burials from the Milliken (DjRi-3) and Esilao (DjRi-5) sites in the lower Fraser River Canyon, British Columbia. Relative proportions of marine (salmon) versus terrestrial protein for the Milliken-Esilao individuals are estimated and compared with previous interpretations of salmon subsistence in the Fraser Canyon. The Milliken-Esilao carbon isotope data are also compared to values for populations from the mid-Fraser and Thompson River valleys and the Fraser Delta to study regional differences in salmon utilization.

**KAYE REED** Portland State University  
**Computer Graphics Analysis of the Meier Site Pit Features**

Sophisticated graphics and statistical programs are now available for XT, AT and Macintosh micro-computers. These programs were used to analyze a set of complex

storage pits and the distribution of artifacts in the Meier Site (35CO5). The software generates three-dimensional maps of both the unit floors throughout the site and artifact distributions above the floors. Mapping permits identification of pit features not recognized during excavations and assignment of artifact clusters to pits.

**LINDA J. REED** University of Oregon  
**Women in the Subarctic: Was Gathering a Viable Economic Activity?**

Subsistence activities are an important aspect of hunting and gathering societies. Although the hunting component has received greater attention in the past, it is now recognized that outside of the Arctic a significant part of the diet is attributed to the gathering activities of women. This paper will examine the importance and economic viability of gathering in the subarctic during the post-contact period.

**MARY F. RICKS** Portland State University  
**WILLIAM J. CANNON** Bureau of Land Management  
**Rock Art and Human Aggregation in the Warner Valley, Oregon**

Margaret Conkey (1980) has suggested that art at Paleolithic aggregation sites in Europe differs from that at non-aggregation sites in several quantifiable ways. Conkey's hypotheses are tested using data from archaeological sites in the Warner Valley region. The results appear to support a model of subsistence and settlement differing from those generally proposed for the Northern Great Basin.

**LYNN A. ROBBINS** Huxley College of Environmental Studies  
**The Role of Ethnohistory in Cultural Preservation**

The Department of Energy is completing its cultural resource management plan for the Hanford site. One of the parts of the plan is about Native Americans who resided on what has become a nuclear technology development site. The bands involved are the Yakima, Wanapum, Umatilla and Nez Perce. This paper summarizes the ethnohistorical research that was conducted on the plan for Battelle Pacific Northwest Laboratories (Richland, Washington), the techniques used, the sources of information and goals of the research. Several Native American elders, some in their 90s, were interviewed about the site for cultural preservation efforts.

**TOM ROLL** Montana State University  
**Powers-Yonkee Revisited**

The Powers-Yonkee Site (24PR5) was excavated in 1960 by the Sheridan Chapter of the Wyoming Archaeological Society. As the first of its kind excavated and reported, it has assumed the status of a type site. A radiocarbon determination of 4,450 ± 125 BP (I-410), attribution of the kill as an arroyo trap, identification of bison remains as transitional between *Bison antiquus* and *Bison bison*, and treatment of the distinctive projectile point assemblage as a variant of the then recently established McKean type resulted in the Powers-Yonkee Site and similar sites being viewed as approximately contemporaneous with other expressions of the McKean complex. In autumn 1986 a Montana State

University field crew working on a cooperative agreement with the Miles City District of the Bureau of Land Management reinvestigated the Powers-Yonkee Site. This work led to the conclusion that the original radiocarbon date and identification of the bison remains were flawed and that the Yonkee technofacies is both 2000 years more recent than originally thought and of relatively brief duration. The results substantially alter the placement of the Yonkee materials in the established Northern Plains cultural chronologies.

**MIKE K. ROUSSEAU** *Simon Fraser University*  
**Changes in Human Sedentism, Mobility, and Subsistence during the Plateau Pithouse Tradition on the Canadian Plateau**

The Plateau Pithouse Tradition is currently acknowledged to have been a major era of relative cultural and adaptive stability during the Late Prehistoric Period (ca. 3500 to 200 BP) on the Canadian Plateau. However, within this cultural tradition, three sequent periods representing distinctly different variations of the generalized Plateau Pithouse Tradition adaptive pattern theme can be readily discerned. They include the Shuswap horizon (ca. 3500 to 2400 BP), Plateau horizon (ca. 2400 to 1200 BP), and Kamloops horizon (ca. 1200 to 200 BP). Based on recent archaeological and paleoenvironmental data, an explicative model is presented that attempts to account for observed changes in human sedentism, mobility, and subsistence between these three cultural horizons.

**LAWR V. SALO** *United States Army Corps of Engineers*  
**Albeni Falls Dam and Pend Oreille Lake: A Systematic Approach to Cultural Resources Management**

The U.S. Army Corps of Engineers, Seattle District, has completed an inventory of cultural resources along the shores of Pend Oreille Lake and the Albeni Falls Dam reservoir. Over 350 sites have been identified within project impact areas, including historic transportation-related sites, prehistoric villages, rock art, fur trade era sites, and a large series of Early Period assemblages. Seattle District is developing a long-term management program to preserve scientific and humanistic values of these resources. Selection of prehistoric habitation sites for further investigation is based on a systematic evaluation of their condition, potential age, and geographic location.

**CATHERINE J. SANDS** *Central Washington University*  
**What's New in the Ghoul School**

Forensic investigation and application are recent specializations of physical anthropology. Scientific study of aging, sexing, racial classification, estimation of stature, time since death, and cause of death are newly being discovered or refined. Until the recent past anthropologists were only involved in cases of unidentified skeletal remains. Now, however, they are being employed and involved in cases which are dealing with partially decayed bodies. In such cases it is incumbent upon the anthropologist to be at least minimally acquainted with forensic botany, entomology and taphonomy. This application of anthropology can lead to rewarding careers and a lifetime of learning.

**ROBERT LEE SAPPINGTON** *Washington State University*  
**Recent Investigations at U.S. Army Fort Walla Walla**

In 1988 archaeologists from the Center for Northwest Anthropology conducted investigations at Fort Walla Walla, Washington, in response to construction of a shopping mall within the boundaries of the 1858-1910 military reservation. While previous archaeologists had recovered considerable cultural material elsewhere in the site, no investigations had ever been conducted in this area. We encountered numerous features, including a dump of 1880s structural debris and another dump which included various materials associated with the Second Cavalry dated 1888-1890. We also encountered later dumps associated with the World War II McCaw Hospital which consisted largely of medical and military items.

**RICHARD SHUTLER, JR.** *Simon Fraser University*  
**Kota Tampan, Malaysia: The Problem is Solved**

The Collings and Sieveking 1938 and 1954 excavations at Kota Tampan produced several hundred lithics claimed as artifacts. Geological interpretations from the 1954 field work placed the site on an ancient marine terrace with a suggested date of late First Glacial or early Second Glacial times. Recent geological work in the Kota Tampan area has challenged this dating. Study of the lithic specimens by myself and others suggests that they are not artifacts. Recent discovery of a 35,000 year old Palaeolithic Workshop near the original excavations permits construction of a model to explain the Kota Tampan dating and lithic problems. In my view, the 1938 and 1954 sites are quarries that provided material for the Workshop people to flake into crude tools some 35,000 years ago.

**JON M. SILVERMOON** *United States Forest Service*  
**Upper McKenzie River Drainage Prehistory: A View from the J&K Enterprises Site (35LA254), Western Oregon**

The J&K Enterprises Site is a lithic scatter on a lower terrace of the upper McKenzie River, Oregon. Morphological projectile point types indicate a Middle Archaic age. Ethnohistoric evidence is mixed, with the area likely being home to the Molala who apparently used fire to manipulate environmental succession. A site evaluation identified three loci which were interpreted as a base camp. A planned data recovery will focus on obtaining firmer chronological information, determining the relationships between artifact loci, assessing the role of aboriginal-set fires, and assessing relationships between the site, nearby upland lithic scatters, and workshops associated with the Obsidian Cliffs quarries.

**LONNIE SOMER** *Washington State University*  
**Australopithecine Postcranial Analysis and a Suggested Reclassification of "Homo habilis"**

The postcranial anatomy of *Australopithecus afarensis*, *A. africanus*, and "Homo habilis" is analyzed to determine if arboreality was still habitually engaged in by these homonids. It is here concluded that while the lower extremities appear to have been largely adapted for bipedality, the skeletal anatomy above the pelvis is strongly suggestive of arboreality,



as are the limb proportions. When the postcranial skeleton of "Homo habilis" is compared to that of *A. africanus* and *Homo erectus*, it shares more similarities with the former. It is therefore suggested that "Homo habilis" would be more correctly classified as "*Australopithecus habilis*."

**RODERICK SPRAGUE University of Idaho**  
**The Flagpoles of San Juan Island**

The excavations carried out on San Juan Island during 1970-78 for the National Park Service resulted in the excavation of three different flagpoles at three of the four major historic sites. The degree of elaboration in the construction of these flagpoles is a direct reflection of the time and resources available to each of the groups erecting a flagpole. The sites involved are English Camp, American Camp, and the Hudson's Bay Company Bellevue Farm.

**M. LELAND STILSON Western Heritage, Inc.**  
**Nisqually Village**

Excavations near 1843 Fort Nisqually are revealing extensive archaeological remains outside the fort's palisade, consisting of Puget Sound Agricultural Company's barns and sheds and the dwellings of company servants. The presence of the dwellings (Nisqually Village) was unknown before the current excavations. Artifact categories and subcategories from Nisqually Village are compared and contrasted with other non-fort domestic assemblages including the Operation 14 house at Kanaka Village, the house discovered off the southeast corner of Fort Vancouver, and the Willamette Mission. Testable hypotheses on artifact densities as relating to chronology, building styles, supply sources, sociological phenomena, and personal tastes, are generated from these comparisons.

**DALE F. STRADLING Eastern Washington University**  
**FELIX E. MUTSCHLER Eastern Washington University**  
**Genesis of Rock Shelters on the Northern Columbia Plateau**

A study of rock shelters at seven sites in the Channeled Scabland shows they all: 1) form re-entrants with overhangs along cliffs bordering coulees or circular depressions; 2) front on rock-fall talus aprons, and often have talus ramparts; and 3) were subjected to late Lake Missoula floods (13 000-11 250 BP). The rock shelters were formed by hydraulic plucking and flushing by Lake Missoula floodwaters which exploited basalt flow-base or within-flow subhorizontal zones of weakness. Important factors contributing to rock shelter morphology include joint patterns and density, flow contact characteristics, and exposure to floodwaters.

**JAMES W. THOMSON National Park Service**  
**Remote Sensing at San Juan National Historical Park**

Between 1859 and 1871, the U.S. Army was stationed on the southern end of San Juan Island during the so-called Pig War between the U.S. and Britain. The site of their encampment is called American Camp and is now a part of the San Juan National Historical

Park. Over 118 years have passed since the army occupied the site and little visible evidence is left of the occupation. As part of an archaeological survey of the park, the Environmental Remote Sensing Applications Laboratory at Oregon State University was contracted to perform an infra-red flyover of the area. After the flyover, a team inspected anomalies on the ground which appeared on the infra-red photographs. This paper will address the process of the infra-red investigation, provide examples of its discoveries, and discuss this remote sensing procedure with other methods.

**DONALD E. TYLER University of Idaho**  
**The Status of Mortuary Remains at the University of Idaho**

In the fall of 1988 the University of Idaho hired its first permanent physical anthropologist. The university has allocated funds and space for the creation of a laboratory of physical anthropology. An inventory of *all* skeletal material housed at the school has been taken; a major portion of these materials are from Washington state. All burials are in the process of being analyzed and readied for reburial. Results of this inventory and plans for future study are discussed.

**DEWARD E. WALKER, Jr. University of Colorado**  
**Anthropology at Hanford**

During the last five years, especially with the Basalt Waste Isolation Project, tribes and anthropologists have become more involved in the affairs of the Department of Energy on the Hanford Reservation. This has resulted in numerous conflicts and agreements which are now appearing in the planning of the Hanford Reservation DOSE reconstruction project. This paper will discuss the evolving relationships among tribes, anthropologists and the Department of Energy. Decisions now being made will significantly influence the future of both anthropologists and tribal members in the Middle Columbia region.

**NAT WASHINGTON Pacific Northwest Archaeological Society**  
**The Centennial Dig at Salishan Mesa**

One of the three Centennial Digs which will be a part of our state's centennial celebration will be at the Salishan Mesa Site in the Grand Coulee. It will be financed and carried out by the U.S. Bureau of Reclamation in July and August of 1989. The extensive project area has two distinct components, both rich in artifacts. One appears to have been a base camp centered around several springs. The uniqueness of the site is suggested by the 1987 test conducted by Eastern Washington University which indicates the presence of bones not only of deer, but also of bison, bighorn sheep, antelope and elk. The second component consists of spectacular and highly defensible Salishan Mesa with its substantial mesa top habitation site and its strategically placed rock alignments. The paper will concentrate on the proposition that the defensible mesa top provided a multi-functional dwelling site and that one of its functions was to provide protection against attacks by hostile raiders. The paper will also suggest the need for revising the "peaceful plateau" theory.

**ROBERT WHITLAM** Office of Archaeology and Historic Preservation  
**Forgotten Forts: Spanish Military Outposts in the Pacific Northwest**

This paper will focus upon the initial European settlements on the Northwest Coast: the Spanish military outposts at Friendly Cove, British Columbia, and Neah Bay, Washington, known respectively as Santa Cruz de Nuca and Nunez Gaona. While research to date on the Spanish forts in the Pacific Northwest has been carried out almost exclusively by historians, I would like to make the case that archaeologists have valuable expertise to offer in documenting and understanding the Spanish presence. I would like to argue for the importance of research archaeology on the Spanish settlements in the Pacific Northwest and in closing, suggest the Spanish forts are deserving recognition and interpretive efforts equal to the British and American Historic Forts.

**BRUCE R. WOMACK** United States Forest Service  
**Preliminary Results of Archaeological Investigations at Pittsburg Landing/ Snake River in the Hells Canyon National Recreation Area**

In response to a proposed recreation development at Pittsburg Landing in Hells Canyon, an intensive cultural resource inventory was conducted. Numerous prehistoric sites were identified of which eight will be impacted to some extent by recreation construction. To date, preliminary testing and evaluation has been completed at seven sites. Data recovery excavations were completed at an additional site, 10-IH-1639, in the summer of 1988. These excavations revealed a multi-component site with initial occupation beginning approximately 5000 BP. When considered together, the eight sites appear to reflect a riverine settlement pattern beginning during the middle archaic and lasting into late prehistoric times.

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